



CT 350 LSX CC/CV

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373109003 - GB

**USE AND MAINTENANCE MANUAL
SPARE PARTS CATALOG**

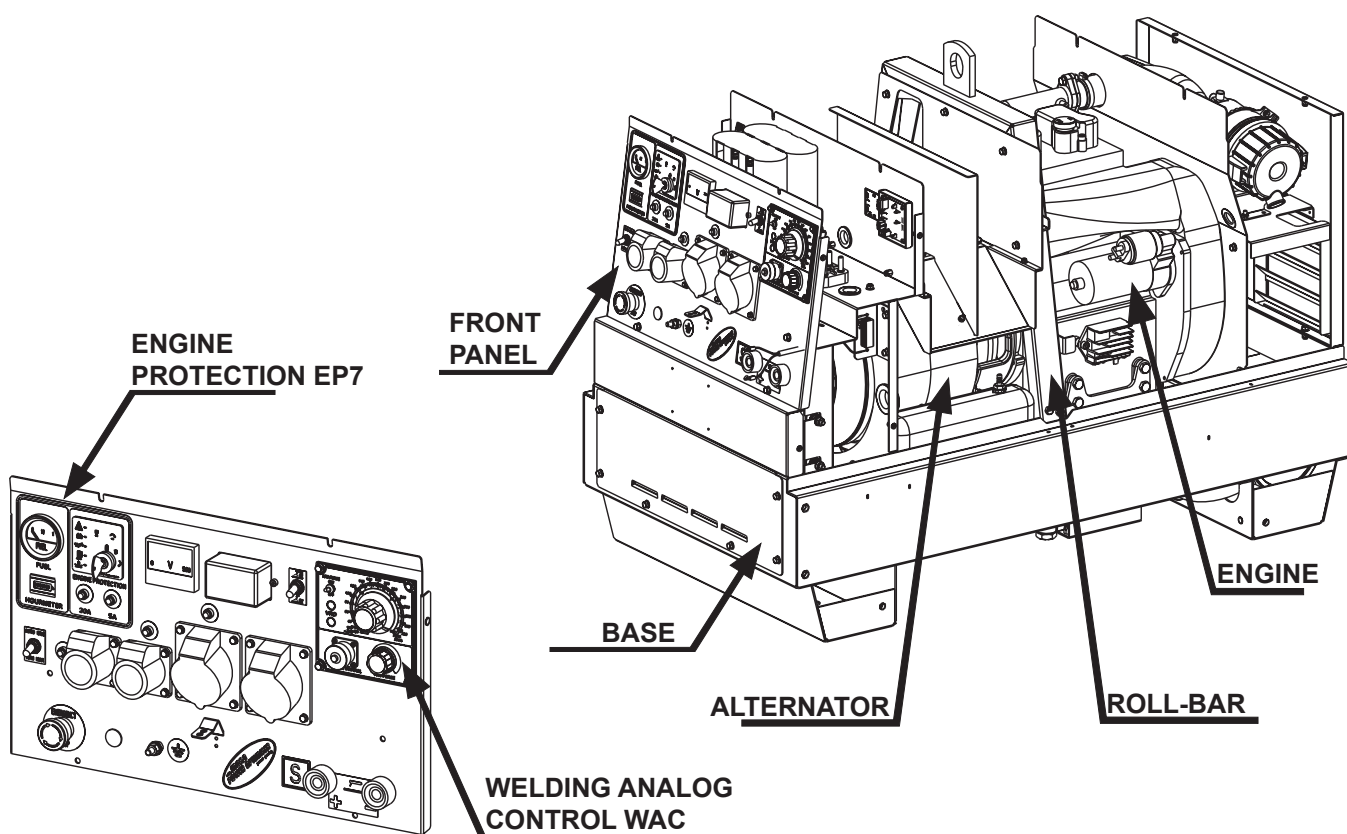
The CT 350 engine driven welder is a unit which ensures the function as:

- a) a current source for are welding
- b) a current source for the auxiliary generation

The welding generator set is a source of DC electric power, driven by an internal combustion engine, which allows to perform arc welding processes with different types of electrodes and, with the CC/CV version, also wire welding. Besides, the generation set can provide ac 50 Hz auxiliary power, both three-phase and single phase, usable for the various needs associated with the welding. The engine which drives the generator set is a two-cylinder diesel type, air cooled, while the alternator is an asynchronous three-phase type. The welding current control is performed by means of a high frequency (20 kHz) "chopper" technique, while the regulation board is implemented with analogue technology.

From a mechanical viewpoint, the machine is composed of a bundled basement and a roll-bar, which support the engine-alternator assembly. The canopy includes a protection cover for the front panel and two lateral doors intended to allow the routine maintenance operations. For the extraordinary maintenance the canopy can be removed in a fairly simple way.

On the front panel there are the engine protection unit (EP7) and the welding control unit (WAC). Located on EP7 there are the start key and a few indicator lights which monitor the engine status. The WAC hosts the regulation knob of the welding current (which regulates also the welding voltage in the CC/CV version) and the arc force knob. The auxiliary power sockets and the welding sockets are also placed on the front panel.





UNI EN ISO 9001 : 2008

ISO 9001:2008 - Cert. 0192

MOSA has certified its quality system according to UNI EN ISO 9001:2008 to ensure a constant, high quality of its products. This certification covers the design, production and servicing of engine driven welders and generating sets.

The certifying institute, ICIM, which is a member of the International Certification Network IQNet, awarded the official approval to MOSA after an examination of its operations at the head office and plant in Cusago (MI), Italy.

This certification is not a point of arrival but a pledge on the part of the entire company to maintain a level of quality of both its products and services which will continue to satisfy the needs of its clients, as well as to improve the transparency and the communications regarding all the company's activities in accordance with the official procedures and in harmony with the MOSA Manual of Quality.

The advantages for MOSA clients are:

- Constant quality of products and services at the high level which the client expects;
- Continuous efforts to improve the products and their performance at competitive conditions;
- Competent support in the solution of problems;
- Information and training in the correct application and use of the products to assure the security of the operator and protect the environment;
- Regular inspections by ICIM to confirm that the requirements of the company's quality system and ISO 9001 are being respected.

All these advantages are guaranteed by the CERTIFICATE OF QUALITY SYSTEM No. 0192 issued by ICIM S.p.A. - Milano (Italy) - www.icim.it

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ATTENTION

This use and maintenance manual is an important part of the machines in question.

The assistance and maintenance personnel must keep said manual at disposal, as well as that for the engine and alternator (if the machine is synchronous) and all other documentation about the machine.

We advise you to pay attention to the pages concerning the security (see page M1.1).



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INFORMATION

Dear Customer,
We wish to thank you for having bought a high quality set.

Our sections for Technical Service and Spare Parts will work at best to help you if it were necessary.

To this purpose we advise you, for all control and overhaul operations, to turn to the nearest authorized Service Centre, where you will obtain a prompt and specialized intervention.

 In case you do not profit on these Services and some parts are replaced, please ask and be sure that are used exclusively original parts; this to guarantee that the performances and the initial safety prescribed by the norms in force are re-established.

 ***The use of non original spare parts will cancel immediately any guarantee and Technical Service obligation.***

NOTES ABOUT THE MANUAL

Before actioning the machine please read this manual attentively. Follow the instructions contained in it, in this way you will avoid inconveniences due to negligence, mistakes or incorrect maintenance. The manual is for qualified personnel, who knows the rules: about safety and health, installation and use of sets movable as well as fixed.

You must remember that, in case you have difficulties for use or installation or others, our Technical Service is always at your disposal for explanations or interventions.

The manual for Use Maintenance and Spare Parts is an integrant part of the product. It must be kept with care during all the life of the product.

In case the machine and/or the set should be yielded to another user, this manual must also given to him.

Do not damage it, do not take parts away, do not tear pages and keep it in places protected from dampness and heat.

You must take into account that some figures contained in it want only to identify the described parts and therefore might not correspond to the machine in your possession.

INFORMATION OF GENERAL TYPE

In the envelope given together with the machine and/or set you will find: the manual for Use Maintenance and Spare Parts, the manual for use of the engine and the tools (if included in the equipment), the guarantee (in the countries where it is prescribed by law).

Our products have been designed for the use of generation for welding, electric and hydraulic system; ANY OTHER DIFFERENT USE NOT INCLUDED IN THE ONE INDICATED, relieves the manufacturer from the risks which could happen or, anyway, from that which was agreed when selling the machine. The manufacturer excludes any responsibility for damages to the machine, to the things or to persons in this case.

Our products are made in conformity with the safety norms in force, for which it is advisable to use all these devices or information so that the use does not bring damage to persons or things.

While working it is advisable to keep to the personal safety norms in force in the countries to which the product is destined (clothing, work tools, etc.).

Do not modify for any motive parts of the machine (fastenings, holes, electric or mechanical devices, others..) if not duly authorized in writing: the responsibility coming from any potential intervention will fall on the executioner as in fact he becomes maker of the machine.

 **Notice:** *this manual does not engage the manufacturer, who keeps the faculty, apart the essential characteristics of the model here described and illustrated, to bring betterments and modifications to parts and accessories, without putting this manual uptodate immediately.*



Any of our product is labelled with CE marking attesting its conformity to applicable directives and also the fulfillment of safety requirements of the product itself; the list of these directives is part of the declaration of conformity included in any machine standard equipment.
Here below the adopted symbol:

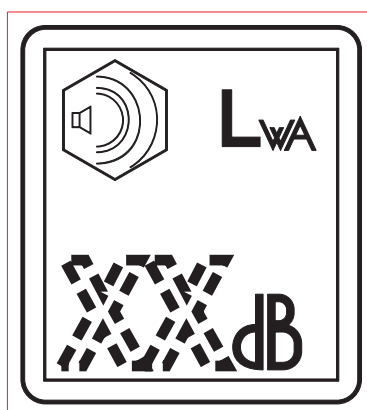


CE marking is clearly readable and unerasable and it can be either part of the data-plate.

 Made in UE-ITALY... TYPE SERIAL N°	
	X I ₂ (A) U ₂ (V)
	I ₂ (A) U ₂ (V)
	Hz P.F. kVA V (V) I (A)
	n ₁ RPM n ₂ RPM P _{max} KW I. CL.

 Made in UE-ITALY... TYPE Generating Set ISO 8528 SERIAL N°	
KVA	
V	
I	
Hz	P.F. LTP POWER IN ACCORDANCE WITH ISO 8528
RPM	I. CL. IP
ALTIT. 100 m	TEMP. 25 °C MASS

Furthermore, on each model it is shown the noise level value; the symbol used is the following:



The indication is shown in a clear, readable and indeleble way on a sticker.

BCS S.p.A.

Sede legale:
 Via Marradi 1
 20123 Milano - Italia

Stabilimento di Cusago, 20090 (MI) - Italia

V.le Europa 59
 Tel.: +39 02 903521
 Fax: +39 02 90390466



ISO 9001:2000 - Cert. 0192

DICHIARAZIONE DI CONFORMITA'



Déclaration de Conformité – Declaration of Conformity – Konformitätserklärung
 Conformanceverklaring – Declaración de Conformidad

BCS S.p.A. dichiara sotto la propria responsabilità che la macchina:
 BCS S.p.A. déclare, sous sa propre responsabilité, que la machine:
 BCS S.p.A. declares, under its own responsibility, that the machine:
 BCS S.p.A. erklärt, daß die Aggregate:
 BCS S.p.A. verklaard, onder haar eigen verantwoordelijkheid, dat de machine:
 BCS S.p.A. declara bajo su responsabilidad que la máquina:

GRUPPO ELETTROGENO DI SALDATURA / WELDING GENERATOR ☐

GRUPPO ELETTROGENO / POWER GENERATOR ☐

Marchio / Brand : MOSA

Modello / Model :

Matricola / Serial number :

è conforme con quanto previsto dalle Direttive Comunitarie e relative modifiche:
 est en conformité avec ce qui est prévu par les Directives Communautaires et relatives modifications:
 conforms with the Community Directives and related modifications:
 mit den Vorschriften der Gemeinschaft und deren Ergänzungen übereinstimmt:
 in overeenkomst is met de inhoud van gemeenschapsrichtlijnen gerelateerde modificaties:
 cumple con los requisitos de la Directiva Comunitaria y sus anexos:

2006/42/CE - 2006/95/CE - 2004/108/CE

Nome e indirizzo della persona autorizzata a costituire il fascicolo tecnico :
 Nom et adresse de la personne autorisée à composer le Dossier Technique :
 Person authorized to compile the technical file and address :
 Name and Adresse der zur Ausfüllung der technischen Akten ermächtigten Person :
 Persoon bevoegd om het technische document , en bedrijf gegevens in te vullen
 Nombre y dirección de la persona autorizada a componer el expediente técnico :

ing. Benso Marelli - Amministratore Delegato / CEO; V.le Europa 59, 20090 Cusago (MI) - Italy

Cusago,

Ing. Benso Marelli
 Amministratore Delegato
 CEO

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Technical data CT 350 LSX CC/CV

GENERATOR

Three-phase generation	10 kVA / 400 V / 14.4 A
Single-phase generation	5 kVA / 230 V / 21.7 A
Single-phase generation	2.5 kVA / 110 V / 22.7 A
Single-phase generation	5 kVA / 48 V / 104 A
Frequency	50 Hz
Cos φ	0.9

ALTERNATOR

Type	Self-excited, self-regulated
Insulating class	three-phase, asynchronous
	H

ENGINE

Mark / Model	Lombardini / 12LD477.2
Type / Cooling system	Diesel 4-stroke / air
Cylinders / Displacement	2 / 954 cm ³
Output max	14 kW (19 HP)
Speed	3000 rpm
Fuel consumption	2.5 l/h
Engine oil capacity	3 l
Starter	Electric

GENERAL SPECIFICATIONS

Tank capacity	38 l
Running time (at duty cycle 60%)	15.2 h
Protection	IP 23
*Dimensions / max. Lxwxh (mm)	1230x690x925
*Weight	345 Kg
Measured acoustic power L _{WA} (pressure L _{pA})	94 dB(A) (69 dB(A) @ 7 m)
Guaranteed acoustic power L _{WA} (pressure L _{pA})	95 dB(A) (70 dB(A) @ 7 m)



* Dimensions and weight are inclusive of all parts without wheels and towbar (CTM).

POWER

Declared power according to ISO 3046-1 (temperature 25°C, 30% relative humidity, altitude 100 m above sea level).

It's admitted overload of 10% each hour every 12 h.

In an **approximative** way one reduces: of 1% every 100 m altitude and of 2.5% for every 5°C above 25°C.

ACOUSTIC POWER LEVEL

ATTENTION: The concrete risk due to the machine depends on the conditions in which it is used. Therefore, it is up to the end-user and under his direct responsibility to make a correct evaluation of the same risk and to adopt specific precautions (for instance, adopting a I.P.D. - Individual Protection Device)

Acoustic Noise Level (L_{WA}) - Measure Unit dB(A): it stands for acoustic noise released in a certain delay of time. This is not submitted to the distance of measurement.

Acoustic Pressure (L_p) - Measure Unit dB(A): it measures the pressure originated by sound waves emission. Its value changes in proportion to the distance of measurement.

The here below table shows examples of acoustic pressure (L_p) at different distances from a machine with Acoustic Noise Level (L_{WA}) of 95 dB(A)

L_p a 1 meter = 95 dB(A) - 8 dB(A) = 87 dB(A)

L_p a 4 meters = 95 dB(A) - 20 dB(A) = 75 dB(A)

L_p a 7 meters = 95 dB(A) - 25 dB(A) = 70 dB(A)

L_p a 10 meters = 95 dB(A) - 28 dB(A) = 67 dB(A)

PLEASE NOTE: the symbol  when with acoustic noise values, indicates that the device respects noise emission limits according to 2000/14/CE directive.

Technical data

CT 350 LSX CC/CV

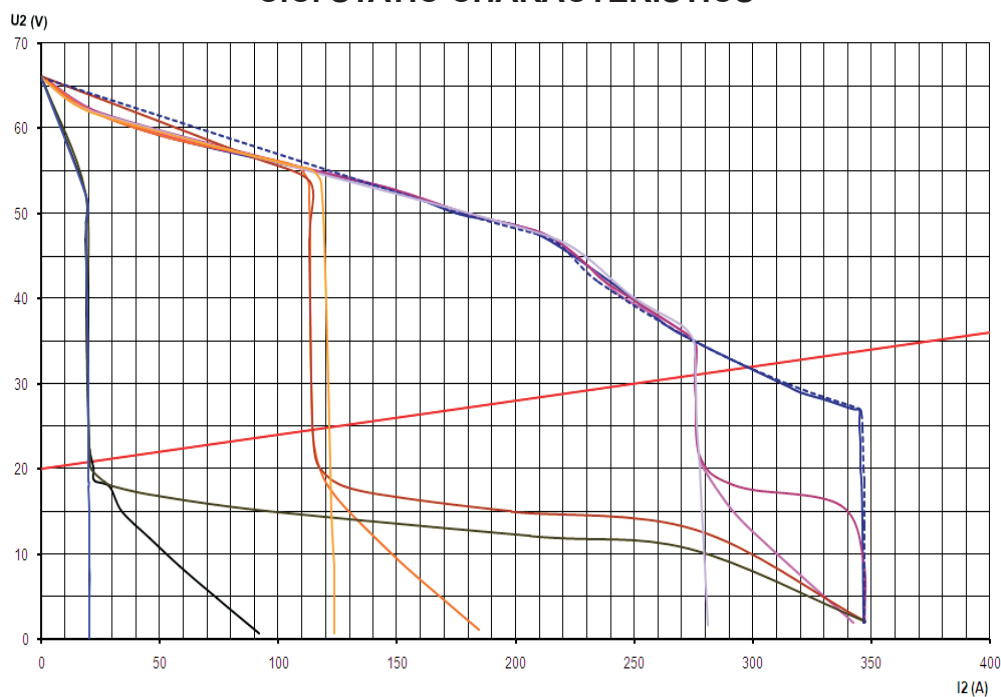
C.C. WELDING

Duty cycle	350A/35% - 300A/60% - 250A/100%
Welding current electronic regulation	20 - 350A
Open circuit voltage	66V

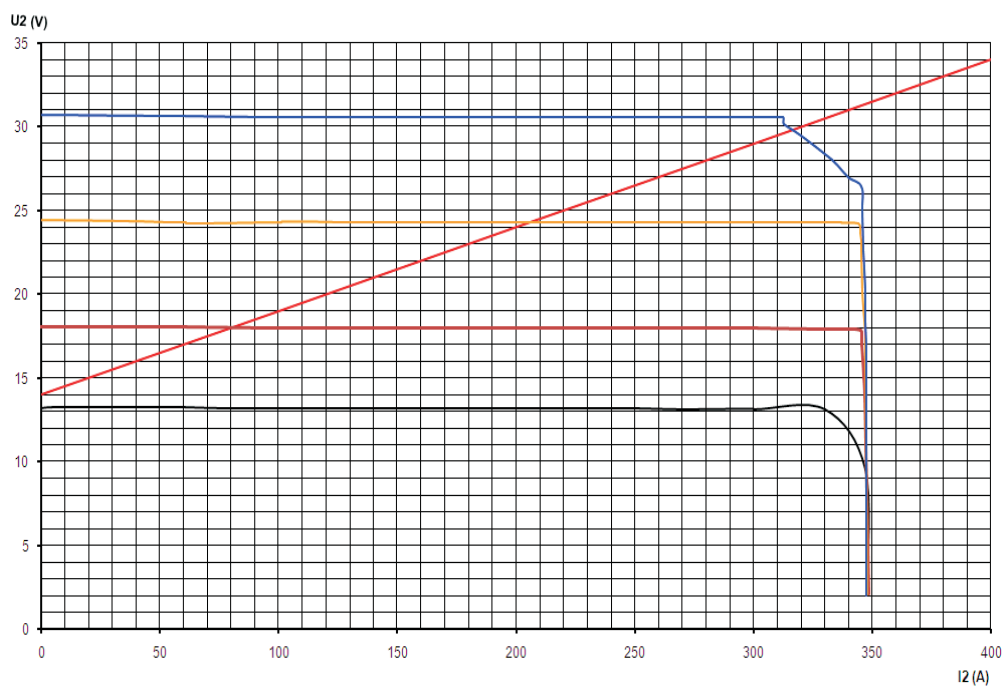
C.V. WELDING

Duty cycle	300A/60% - 250A/100%
Open circuit voltage	16V - 30V

C.C. STATIC CHARACTERISTICS



C.V. STATIC CHARACTERISTICS



SIMULTANEOUS UTILISATION LIMITS

WELDING CURRENT (CC) [A]	0	50	100	150	200	250	300	350
AUXILIARY POWER 3-PHASE [Kw]	8.0	8.0	7.0	5.5	3.5	2.0	0	0
AUXILIARY POWER SINGLE PHASE [Kw]	4.0	4.0	4.0	4.0	3.5	2.0	0	0

SYMBOLS IN THIS MANUAL

- The symbols used in this manual are designed to call your attention to important aspects of the operation of the machine as well as potential hazards and dangers for persons and things.

IMPORTANT ADVICE

- Advice to the User about the safety:

N.B.: The information contained in the manual can be changed without notice. Potential damages caused in relation to the use of these instructions will not be considered because these are only indicative. Remember that the non observance of the indications reported by us might cause damage to persons or things. It is understood, that local dispositions and/or laws must be respected.

WARNING



Situations of danger - no harm to persons or things

Do not use without protective devices provided

Removing or disabling protective devices on the machine is prohibited.

Do not use the machine if it is not in good technical condition

The machine must be in good working order before being used. Defects, especially those which regard the safety of the machine, must be repaired before using the machine.

SAFETY PRECAUTIONS



DANGEROUS

This heading warns of an immediate danger for persons as well for things. Not following the advice can result in serious injury or death.



WARNING

This heading warns of situations which could result in injury for persons or damage to things.



CAUTION

To this advice can appear a danger for persons as well as for things, for which can appear situations bringing material damage to things.



IMPORTANT



NOTE



ATTENTION

These headings refer to information which will assist you in the correct use of the machine and/or accessories.

SYMBOLS



STOP - Read absolutely and be duly attentive



Read and pay due attention



GENERAL ADVICE - If the advice is not respected damage can happen to persons or things.



HIGH VOLTAGE - Attention High Voltage. There can be parts in voltage, dangerous to touch. The non observance of the advice implies life danger.



FIRE - Danger of flame or fire. If the advice is not respected fires can happen.



HEAT - Hot surfaces. If the advice is not respected burns or damage to things can be caused.



EXPLOSION - Explosive material or danger of explosion. in general. If the advice is not respected there can be explosions.



WATER - Danger of shortcircuit. If the advice is not respected fires or damage to persons can be caused.



SMOKING - The cigarette can cause fire or explosion. If the advice is not respected fires or explosions can be caused.



ACIDS - Danger of corrosion. If the advice is not respected the acids can cause corrosions with damage to persons or things.



WRENCH - Use of the tools. If the advice is not respected damage can be caused to things and even to persons.



PRESSION - Danger of burns caused by the expulsion of hot liquids under pressure.



ACCES FORBIDDEN to non authorizad people.

PROHIBITIONS No harm for persons

Use only with safety clothing -



It is compulsory to use the personal protection means given in equipment.

Use only with safety clothing -



It is compulsory to use the personal protection means given in equipment.

Use only with safety protections -



It is a must to use protection means suitable for the different welding works.

Use with only safety material -



It is prohibited to use water to quench fires on the electric machines.

Use only with non inserted voltage -



It is prohibited to make interventions before having disinserted the voltage.

No smoking -



It is prohibited to smoke while filling the tank with fuel.

No welding -



It is forbidden to weld in rooms containing explosive gases.

ADVICE No harm for persons and things

Use only with safety tools, adapted to the specific use -

It is advisable to use tools adapted to the various maintenance works.

Use only with safety protections, specifically suitable



It is advisable to use protections suitable for the different welding works.

Use only with safety protections -



It is advisable to use protections suitable for the different daily checking works.

Use only with safety protections -



It is advisable to use all protections while shifting the machine.

Use only with safety protections -



It is advisable to use protections suitable for the different daily checking works.and/or of maintenance.

 The installation and the general advice concerning the operations, are finalized to the correct use of the machine, in the place where it is used as generator group and/or welder.

ENGINE	Stop engine when fueling	CHECKING BOARD	Do not touch electric devices if you are barefoot or with wet clothes.
	Do not smoke, avoid flames, sparks or electric tools when fueling.		
	Unscrew the cap slowly to let out the fuel vapours.		Always keep off leaning surfaces during work operations.
	Slowly unscrew the cooling liquid tap if the liquid must be topped up.		
	The vapor and the heated cooling liquid under pressure can burn face, eyes, skin.		Static electricity can damage the parts on the circuit.
	Do not fill tank completely.		
	Wipe up spilled fuel before starting engine.		An electric shock can kill
	Shut off fuel of tank when moving machine (where it is assembled).		
	Avoid spilling fuel on hot engine.		
	Sparks may cause the explosion of battery vapours		



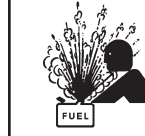
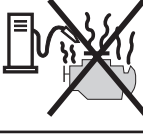
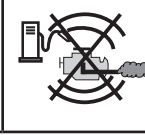
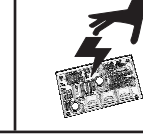
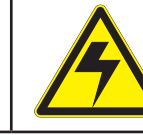
 **FIRST AID.** In case the operator should be sprayed by accident, from corrosive liquids a/o hot toxic gas or whatever event which may cause serious injuries or death, predispose the first aid in accordance with the ruling labour accident standards or of local instructions.

Skin contact	Wash with water and soap
Eyes contact	Irrigate with plenty of water, if the irritation persists contact a specialist
Ingestion	Do not induce vomit as to avoid the intake of vomit into the lungs, send for a doctor
Suction of liquids from lungs	If you suppose that vomit has entered the lungs (as in case of spontaneous vomit) take the subject to the hospital with the utmost urgency
Inhalation	In case of exposure to high concentration of vapours take immediately to a non polluted zone the person involved



 **FIRE PREVENTION.** In case the working zone, for whatsoever cause goes on fire with flames liable to cause severe wounds or death, follow the first aid as described by the ruling norms or local ones.

EXTINCTION MEANS	
Appropriated	Carbonate anhydride (or carbon dioxide) powder, foam, nebulized water
Not to be used	Avoid the use of water jets
Other indications	Cover eventual shedding not on fire with foam or sand, use water jets to cool off the surfaces close to the fire
Particular protection	Wear an autorespiratory mask when heavy smoke is present
Useful warnings	Avoid, by appropriate means to have oil sprays over metallic hot surfaces or over electric contacts (switches, plugs, etc.). In case of oil sprinkling from pressure circuits, keep in mind that the inflammability point is very low.

WARNING					CAUTION		DANGEROUS
							
							

	THE MACHINE <u>MUST NOT BE USED</u> IN AREAS WITH EXPLOSIVE ATMOSPHERE
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INSTALLATION AND ADVICE BEFORE USE

The operator of the welder is responsible for the security of the people who work with the welder and for those in the vicinity.

The security measures must satisfy the rules and regulations for engine driven welders.

The information given below is in addition to the local security norms.

Estimate possible electromagnetic problems in the work area taking into account the following indications.

1. Telephonic wirings and/or of communication, check wirings and so on, in the immediate vicinity.
2. Radio and television receptors and transmettors.
3. Computer and other checking devices.
4. Critical devices for safety and/or for industrial checks.
5. Peapol who, for instance, use pace-maker, hearing-aid for deaf or something and else.
6. Devices used for rating and measuring.
7. The immunity of other devices in the operation area of the welder. Make sure that other used devices are compatible. If it is the case, provide other additional measures of protection.
8. The daily duration of the welding time.



Make sure that the area is safe before starting any welding operation.

- Do not touch any bare wires, leads or contacts as they may be live and there is danger of electric shock which can cause death or serious burns. The electrode and welding cables, etc. are live when the unit is operating.
- Do not touch any electrical parts or the electrode while standing in water or with wet hands, feet or clothes.
- Insulate yourself from the work surface while welding. Use carpets or other insulating materials to avoid physical contact with the work surface and the floor.
- Always wear dry, insulating gloves, without holes, and body protection.
- Do not wind cables around the body.
- Use ear protections if the noise level is high.
- Keep flammable material away from the welding area.
- Do not weld on containers which contain flammable material.
- Do not weld near refuelling areas.
- Do not weld on easily flammable surfaces.
- Do not use the welder to defrost (thaw) pipes.
- Remove the electrode from the electrode holder, when not welding.
- Avoid inhaling fumes by providing a ventilation system or, if not possible, use an approved air breather.
- Do not work in closed areas where there is no fresh air flow.
- Protect face and eyes (protective mask with suitable dark lens and side screens), ears and body (non-flammable protective clothers).



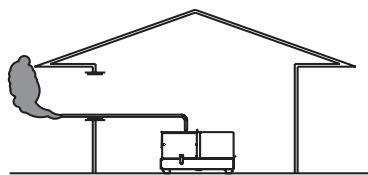
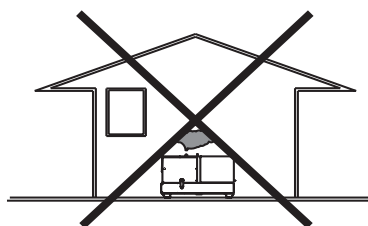
INSTALLATION AND ADVICE BEFORE USE

GASOLINE ENGINES

- Use in open space, air swept or vent exhaust gases, which contain the deadly carbone oxyde, far from the work area.

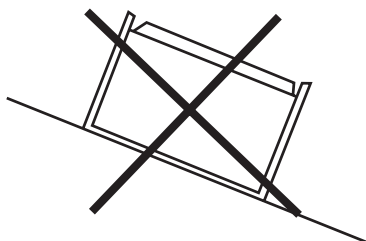
DIESEL ENGINES

- Use in open space, air swept or vent exhaust gases far from the work area.

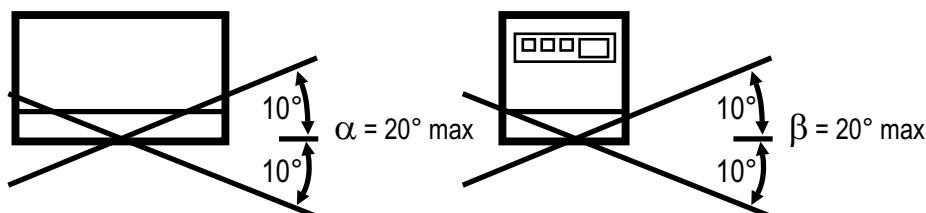


POSITION

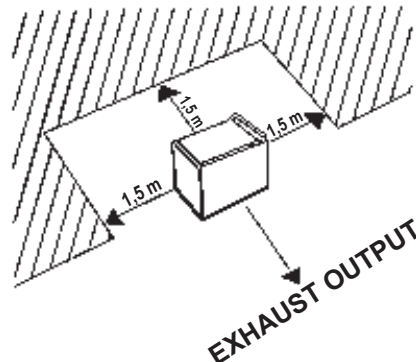
Place the machine on a level surface at a distance of at least 1,5 m from buildings or other plants.



Maximum leaning of the machine (in case of dislevel)



Check that the air gets changed completely and the hot air sent out does not come back inside the set so as to cause a dangerous increase of the temperature.



- Make sure that the machine does not move during the work: **block** it possibly with tools and/or devices made to this purpose.

MOVES OF THE MACHINE

- At any move check that the engine is **off**, that there are no connections with cables which impede the moves.

PLACE OF THE MACHINE

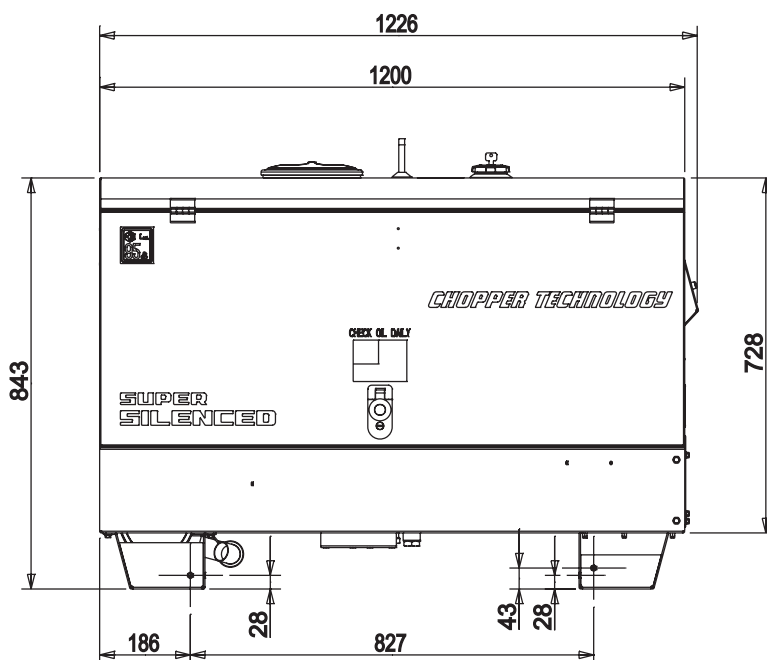
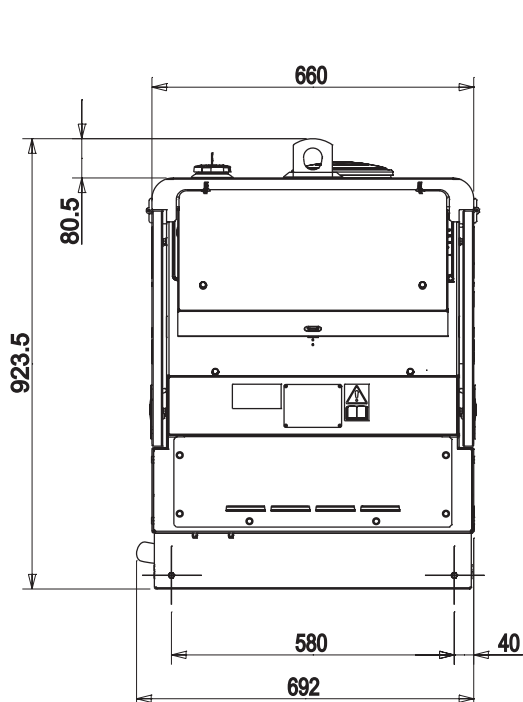
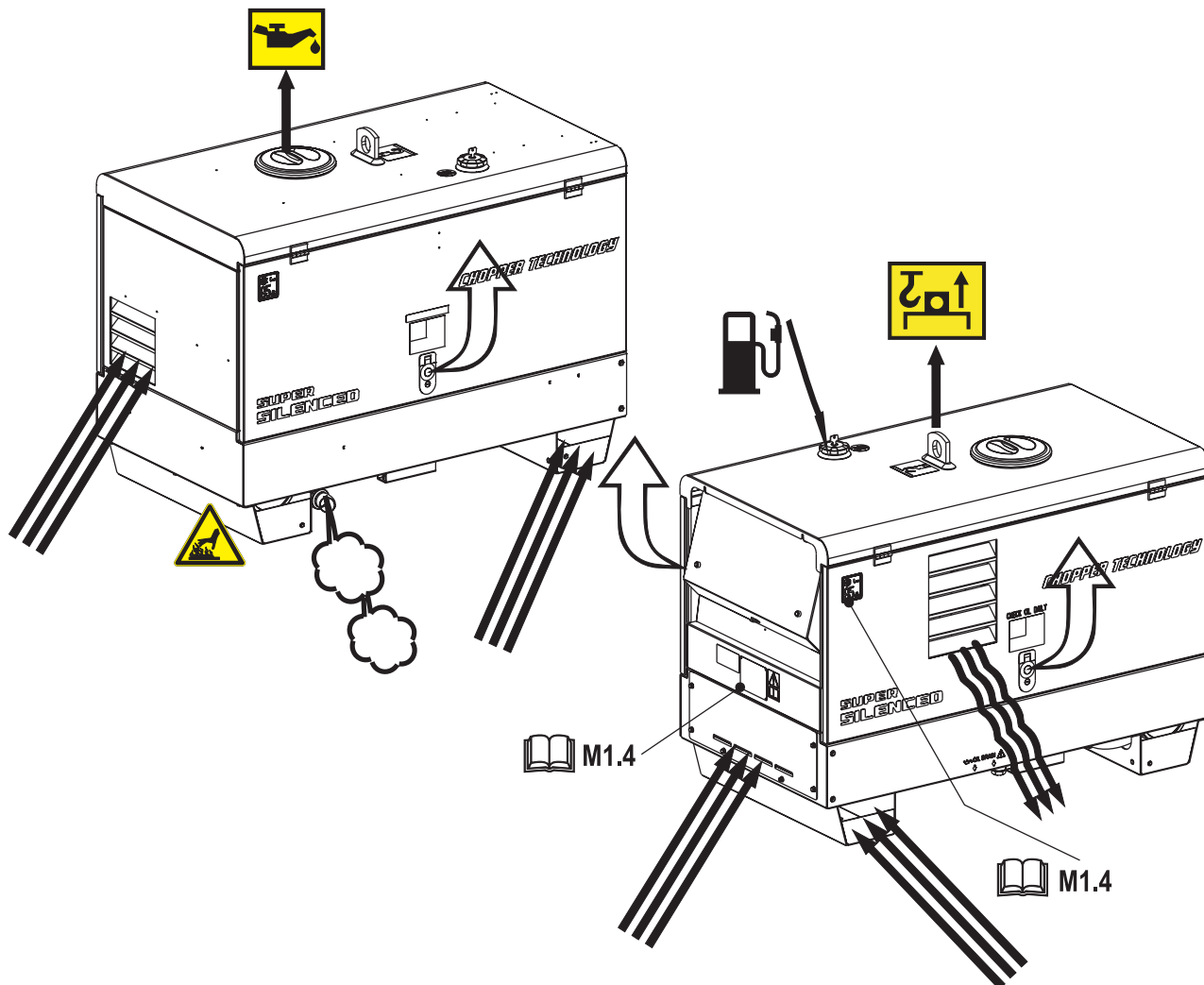


ATTENTION



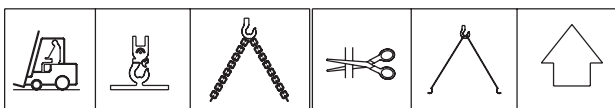
For a safer use from the operator **DO NOT** fit the machine in locations with high risk of flood.

Please do not use the machine in weather conditions which are beyond IP protection shown both in the data plate and on page named "technical data" in this same manual.



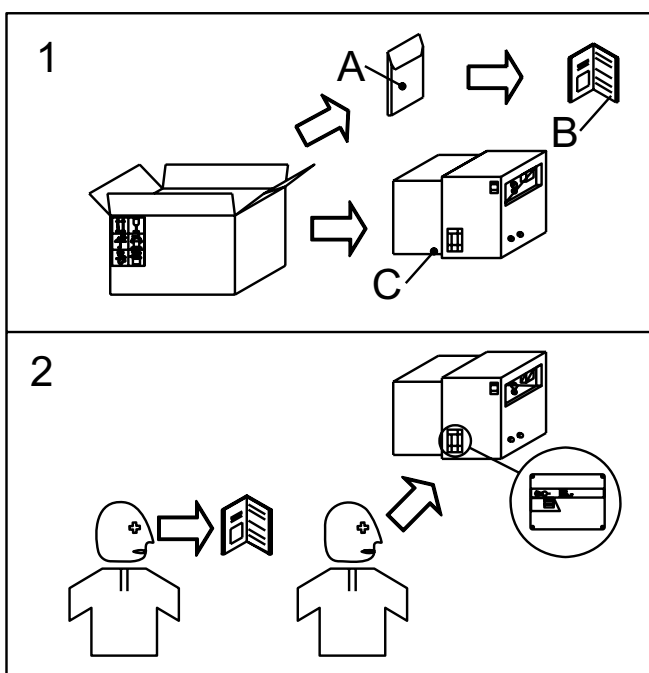
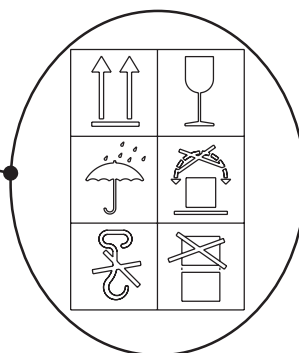
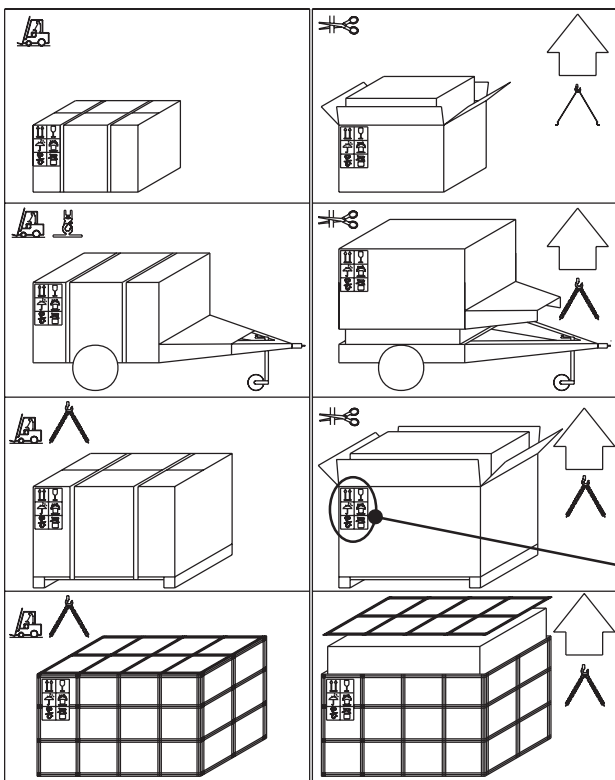


NOTE



Be sure that the lifting devices are: correctly mounted, adequate for the weight of the machine with its packaging, and conforms to local rules and regulations. When receiving the goods make sure that the product has not suffered damage during the transport, that there has not been rough handling or taking away of parts contained inside the packing or in the set. In case you find damages, rough handling or absence of parts (envelopes, manuals, etc.), we advise you to inform immediately our Technical Service.

For eliminating the packing materials, the User must keep to the norms in force in his country.



- 1) Take the machine (C) out of the shipment packing. Take out of the envelope (A) the user's manual (B).
- 2) Read: the user's manual (B), the plates fixed on the machine, the data plate.



NOTE

Transportation must always take place with the engine off, electrical cables and starting battery disconnected and fuel tank empty.

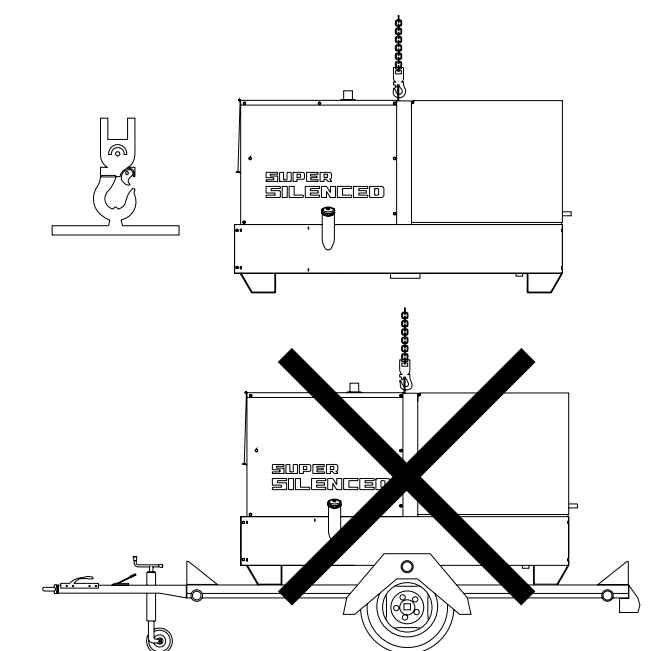
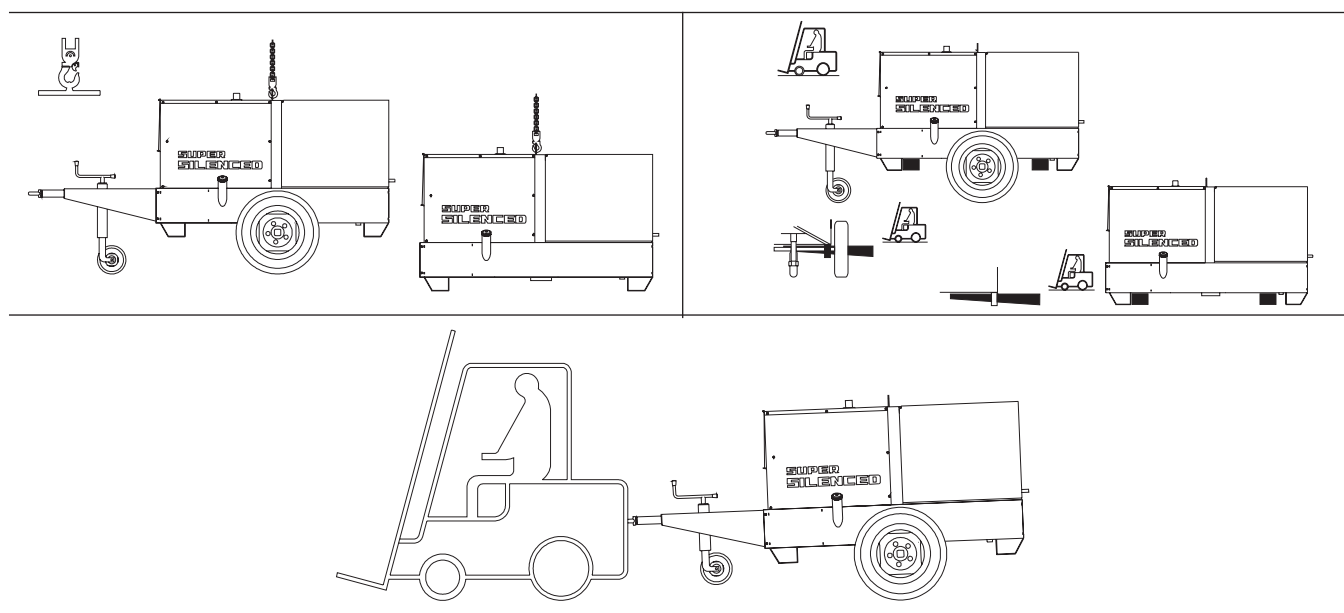
Be sure that the lifting devices are: correctly mounted, adequate for the weight of the machine with it's packaging, and conform to local rules and regulations.

Only authorized persons involved in the transport of the machine should be in the area of movement.

DO NOT LOAD OTHER PARTS WHICH CAN MODIFY WEIGHT AND BARICENTER POSITION.

IT IS STRICTLY FORBIDDEN TO DRAG THE MACHINE MANUALLY OR TOW IT BY ANY VEHICLE (model with no CTL accessory).

If you did not keep to the instructions, you could damage the structure of the machine.



LIFT ONLY THE MACHINE

DO NOT LIFT THE MACHINE AND TRAILER



DANGER: LIFTING EYE IS NOT DESIGNED TO SUPPORT ADDED WEIGHT OF ROAD TOW TRAILER





NOTE

Transportation must always take place with the engine off, electrical cables and starting battery disconnected and fuel tank empty.

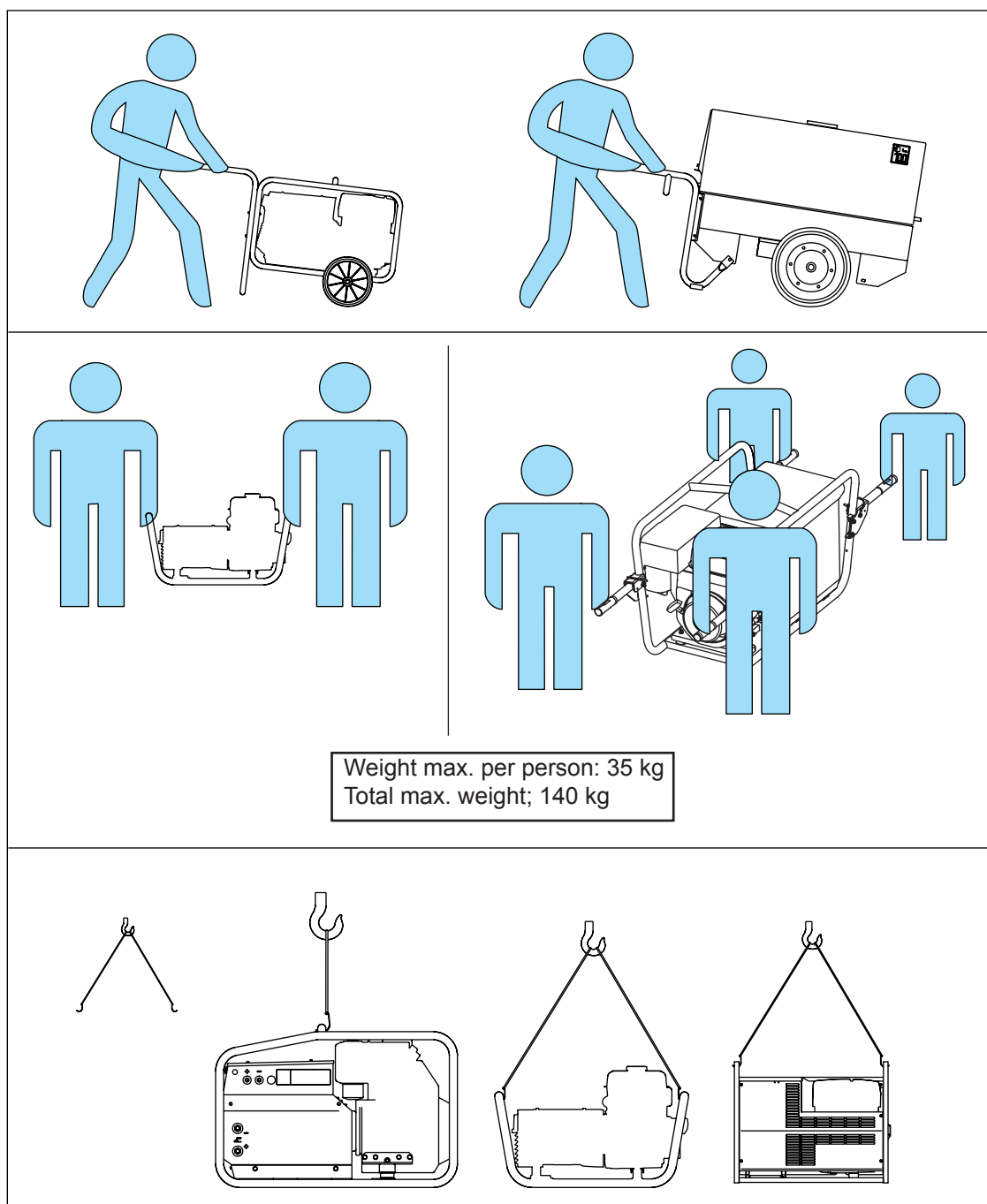
Be sure that the lifting devices are: correctly mounted, adequate for the weight of the machine with it's packaging, and conform to local rules and regulations.

Only authorized persons involved in the transport of the machine should be in the area of movement.

DO NOT LOAD OTHER PARTS WHICH CAN MODIFY WEIGHT AND BARICENTER POSITION.

IT IS STRICTLY FORBIDDEN TO DRAG THE MACHINE MANUALLY OR TOW IT BY ANY VEHICLE (model with no CTM accessory).

If you did not keep to the instructions, you could damage the structure of the machine.





ATTENTION

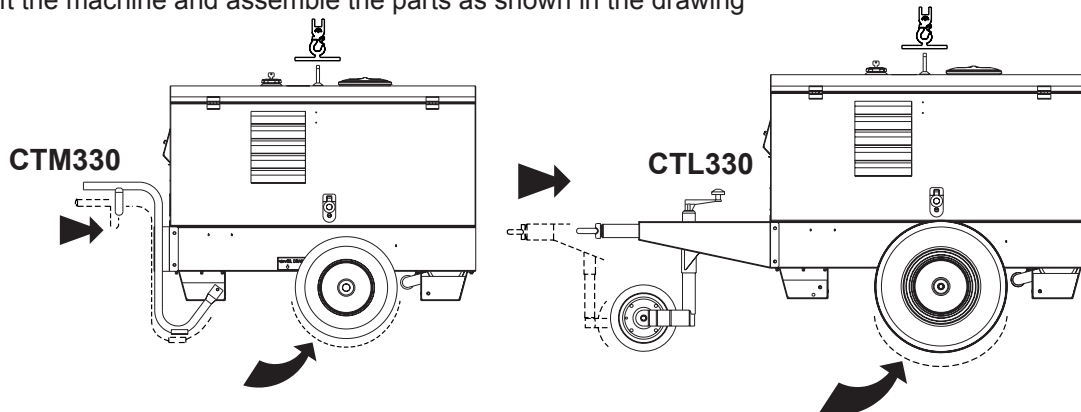
The CTL accessory cannot be removed from the machine and used separately (actioned manually or following vehicles) for the transport of loads or anyway for used different from the machine movements.

TRAILERS

The machines provided for assembling the accessory (slow towing trolley) can be towed up to a **maximum** speed of **40 Kms/hour** on asphalted surfaces.

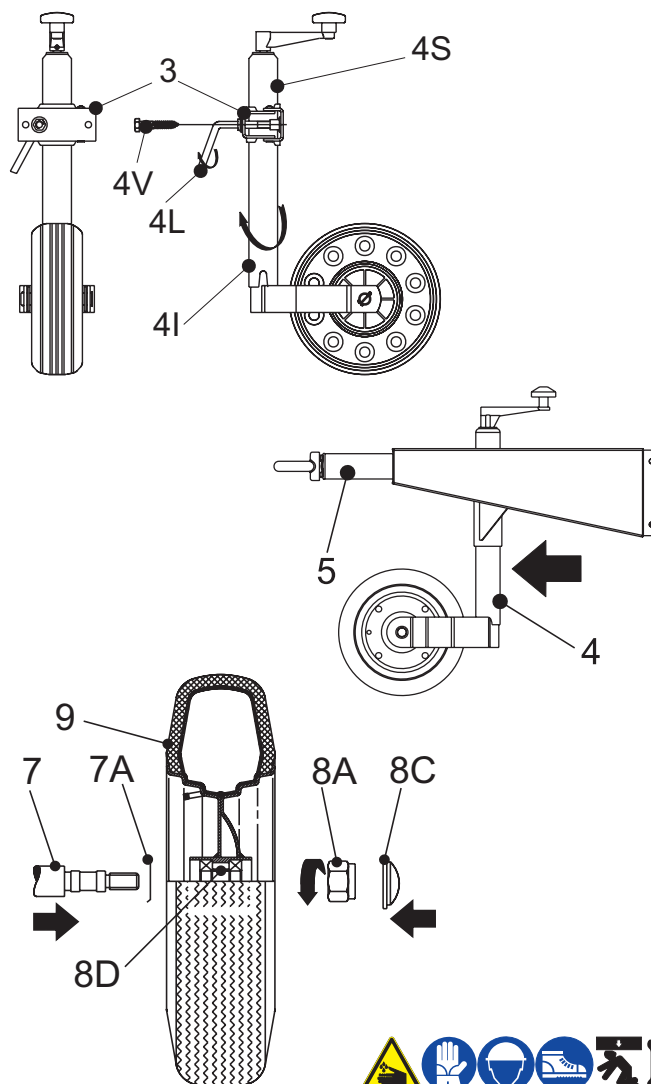
Towing on public roads or turnpikes of any type **IS EXCLUDED**, because **not** in possession of the requirements by national and foreign traffic norms.

Nota: Lift the machine and assemble the parts as shown in the drawing



For assembling the generating set on the trolley CTL330 please keep to following instructions:

- 1) - Lift the generating set (by means of suitable hook).
- 2) - Slightly fix the jaw (3) of the parking foot to the bar with the M10x20 screws, the M10 nuts and the washers (so as to let the foot sprag go through).
- 3) - Split (unscrewing them) the two parts of the foot (4S-4I) to be able later to assemble them on the jaw.
- 4) - Introduce into the jaw (3) the upper part (4S) of the foot and screw again the lower part (4I), then tighten the screws (4V) of the jaw to the towbar and block momentarily with the lever (4L) the whole foot.
- 5) - Assemble on the machine the towbar (5) complete of foot with the M10x20 screws, nuts and washers.
- 6) - Assemble the axle (7) to the base of the machine with the M8x20 screws and relative washers (two per part) so that their supports coincide.
- 7) - Introduce on the axle the antidust ring (7A) with folded edges turned toward the machine.
- 8) - Insert the wheel (9) on the axle paying attention to the spacer (8D) which is between the two bearings, then insert the self blocking nut (8A) and finally assemble the shutting cap (8C).
- 9) - Pump the tyre (9) bringing the pressure to three atms.
- 10) - Lower the machine to the ground and place the parking foot definitively (regulating at the best height).



ATTENTION

Do not substitute the original tires with other types.



BATTERY WITHOUT MAINTENANCE



Connect the cable + (positive) to the pole + (positive) of the battery (after having taken away the protection), by properly tightening the clamp.

Check the state of the battery from the colour of the warning light which is in the upper part.

- Green colour: battery OK
- Black colour: battery to be recharged
- White colour: battery to be replaced

DO NOT OPEN THE BATTERY.



LUBRICANT

RECOMMENDED OIL

MOSA recommends selecting **AGIP** engine oil. Refer to the label on the motor for the recommended products.

PRODOTTI RACCOMANDATI RECOMMENDED PRODUCTS	
AGIP SIGMA TURBO PLUS 15W/40 API CG4 - ACEA E3	OLIO MOTORE DIESEL DIESEL ENGINE OIL
AGIP SUPERMOTOROIL 20W/50 API CC-SF	OLIO MOTORE BENZINA GASOLINE ENGINE OIL
AGIP ANTIFREEZE EXTRA INIBITE ETHYLENE GLYCOL (50% + 50% + H ₂ O)	CIRCUITO DI RAFFREDDAMENTO COOLING CIRCUIT (CUNA NC 956-16 ED 97)

Please refer to the motor operating manual for the recommended viscosity.

REFUELLING AND CONTROL:

Carry out refuelling and controls with motor at level position.

1. Remove the oil-fill tap (24)
2. Pour oil and replace the tap
3. Check the oil level using the dipstick (23); the oil level must be comprised between the minimum and maximum indicators.



ATTENTION

It is dangerous to fill the motor with too much oil, as its combustion can provoke a sudden increase in rotation speed.



DRY AIR FILTER

Check that the dry air filter is correctly installed and that there are no leaks around the filter which could lead to infiltrations of non-filtered air to the inside of the motor.



OIL BATH AIR FILTER

Fill the air filter using the same engine oil up to the level indicated on the filter.



FUEL



ATTENTION



Do not smoke or use open flames during refuelling operations, in order to avoid explosions or fire hazards.

Fuel fumes are highly toxic; carry out operations outdoors only, or in a well-ventilated environment.



Avoid accidentally spilling fuel. Clean any eventual leaks before starting up motor.

Refill the tank with good quality diesel fuel, such as automobile type diesel fuel, for example.

For further details on the type of diesel fuel to use, see the motor operating manual supplied.

Do not fill the tank completely; leave a space of approx. 10 mm between the fuel level and the wall of the tank to allow for expansion.

In rigid environmental temperature conditions, use special winterized diesel fuels or specific additives in order to avoid the formation of paraffin.



GROUNDING CONNECTION

The grounding connection to an earthed installation **is obligatory** for all models equipped with a differential switch (circuit breaker). In these groups the generator star point is generally connected to the machine's earthing; by employing the TN or TT distribution system, the differential switch guarantees protection against indirect contacts.

In the case of powering complex installations requiring or employing additional electrical protection devices, the coordination between the protection devices must be verified.

For the grounding connection, use the terminal (12); comply to local and/or current regulations in force for electrical installations and safety.





Check daily



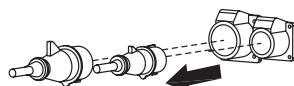
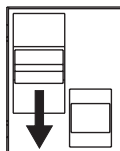
NOTE

Do not alter the primary conditions of regulation and do not touch the sealed parts.

ATTENTION

1. By start-up of the generator the welding circuit is immediately operative, i.e. under voltage. Make sure that there are no unwished electrical contacts between the components of the outside welding circuit (electrode, electrode holder gun, workpiece, etc...).

2. Check that at the start-up the a.c. auxiliary generation sockets do not feed any load. Open the electric protection interrupter of the generator or disconnect the plugs of the loads from the sockets.



3. START-UP

Remember that when the machines with auto-idle have the signal set to "auto-idle" will remain at the minimum no. of revs (tickover) as long as no current is drawn.

Drawing power will automatically raise the number of engine revs to the nominal value and likewise the tension in the alternator.

Instead, by setting the auto-idle signal to "max", the engine revs will immediately rise to the nominal value and likewise the tension in the alternator.

For the machines with manual accelerator, it is necessary to accelerate the motor manually in order to reach the nominal tension.

Starting is actuated using the key which is an integral part of the EP7 post on the front panel.

- A) - Turn the key in a clockwise direction until all the LED lights are illuminated.
- B) - Wait until the "OIL PRESSURE" and "BATTERY VOLTAGE" LEDs remain illuminated. If the timer lamp is used, the yellow "PREHEAT" LED comes on for the set time of the imposed settings.
- C) - As soon as the green "ENGINE RUNNING" LED starts to flash, actuate the key switch in a clockwise direction (momentarily in the position then with return to rest) until obtaining starting of the engine.

If the motor does not start within 15 seconds, the non starting alert will intervene: the two LEDs "Engine running" and "glow plug" will flash alternately (see motor protection description).

- D) - At any time it is possible to stop the engine by turning the key in an anti-clockwise direction (OFF position).

In case of engine anomaly due to low oil pressure, high temperature, broken transmission belt, low fuel level or emergency the EP7 will automatically stop the engine.

4. The motor starts up at its operating speed, 3000 rpm. After start-up, allow the motor to run for a few minutes before powering on the utilities. See table;

Temperature	Time
$\leq -20^{\circ}\text{C}$	5 min.
da -20°C a -10°C	2 min.
da -10°C a -5°C	1 min.
$\geq 5^{\circ}\text{C}$	20 sec.

5. start-up at low temperatures.

The motor will normally start up without problems down to temperatures of -10°C , -15°C . In case of starting difficulty, it is possible to repeat the starting preheating for a max. time of 10 second, lightly turning the trimmer situated at the back of the EP7 in a clockwise direction (see page M39.13 relating to engine protection "trimmer/glow plug"). For start-up and use at lower temperatures please see the engine manual or turn to our Technical Assistance Center.

In case of unsuccessful start-up, do not insist for longer than 5 seconds. Wait 10 - 15 seconds before attempting another start-up.



CAUTION

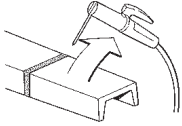
RUNNING-IN

During the first 50 hours of operation, do not use more than 60% of the maximum output power of the unit and check the oil level frequently, in any case please stick to the rules given in the engine use manual.

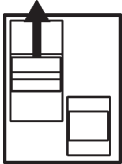
STOP

For shutdown under normal conditions, proceed as follows:

1. Break the welding process in course

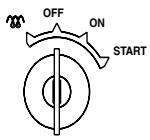


2. Break the production of a.c. auxiliary generation dividing the loads or opening the GFI (D).



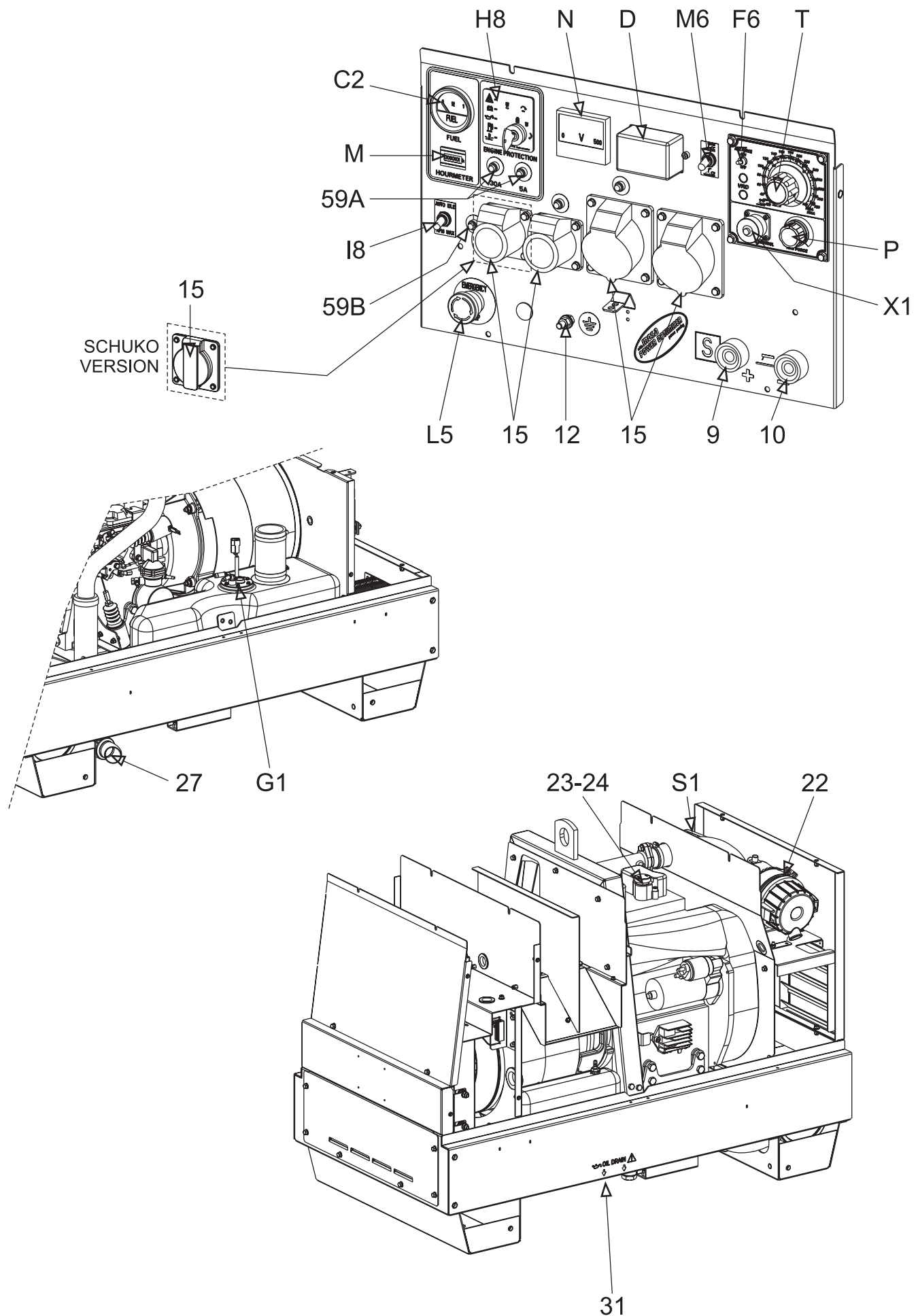
3. Let the engine run with no load for a few minutes.
Set the engine speed to minimum, signal of motor speed to "auto-idle", or accelerator to minimum for manual accelerator.

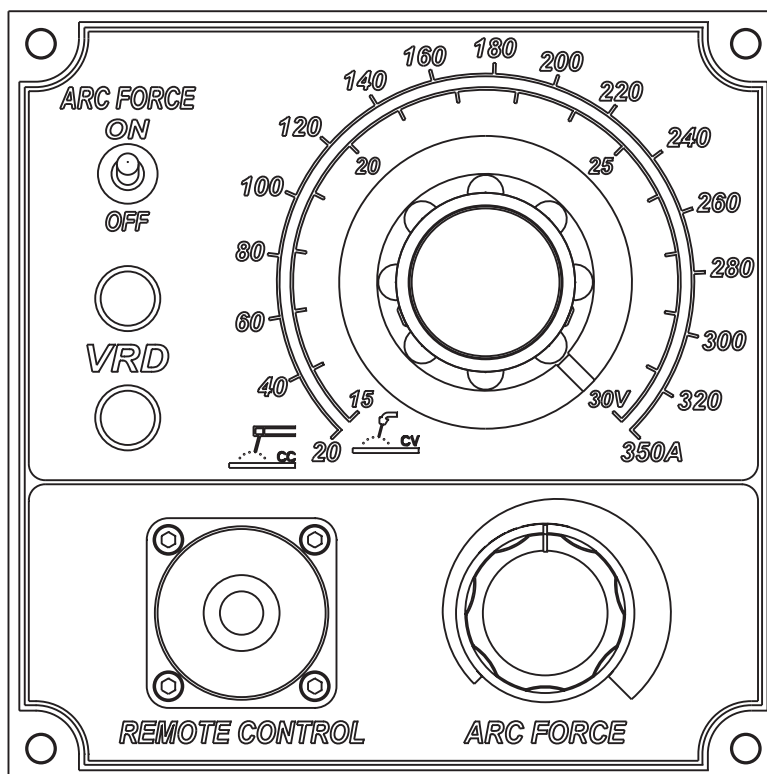
4. Turn the start key on the EP7 to the OFF position.

**EMERGENCY SHUTDOWN**

To stop the group in a dangerous situation, press the emergency stop button (L5) (or turn the start key (Q1) to the OFF position). To reset the knob, turn it clockwise.

4A	Hydraulic oil level light	B4	Exclusion indicating light PTO HI	W5	Battery voltmeter
9	Welding socket (+)	B5	Auxiliary current push button	X1	Remote control socket
10	Welding socket (-)	C2	Fuel level light	Y3	Button indicating light 20 l/1' PTO HI
12	Earth terminal	C3	E.A.S. PCB	Y5	Commutator/switch, serial/parallel
15	A.C. socket	C6	Control unit for generating sets QEA	Z2	Thermal-magnetic circuit breaker
16	Accelerator lever	D	Ground fault interrupter (30 mA)	Z3	Selection push button 20 l/1' PTO HI
17	Feed pump	D1	Engine control unit and economiser EP1	Z5	Water temperature indicator
19	48V D.C. socket	D2	Ammeter		
22	Engine air filter	E2	Frequency meter		
23	Oil level dipstick	E6	Frequency rpm regulator		
24	Engine oil reservoir cap	E7	Voltmeter regulator		
24A	Hydraulic oil reservoir cap	F	Fuse		
24B	Water filling cap	F3	Stop switch		
25	Fuel prefilter	F5	Warning light, high temperature		
26	Fuel tank cap	F6	Arc-Force selector		
27	Muffler	G1	Fuel level transmitter		
28	Stop control	H2	Voltage commutator		
29	Engine protection cover	H6	Fuel electro pump		
30	Engine cooling/alternator fan belt	H8	Engine control unit EP7		
31	Oil drain tap	I2	48V A.C. socket		
31A	Hydraulic oil drain tap	I3	Welding scale switch		
31B	Water drain tap	I4	Preheating indicator		
31C	Exhaust tap for tank fuel	I5	Y/▲ switch		
32	Button	I6	Start Local/Remote selector		
33	Start button	I8	AUTOIDLE switch		
34	Booster socket 12V	L	A.C. output indicator		
34A	Booster socket 24V	L5	Emergency button		
35	Battery charge fuse	L6	Choke button		
36	Space for remote control	M	Hour counter		
37	Remote control	M1	Warning level light		
42	Space for E.A.S.	M2	Contactor		
42A	Space for PAC	M5	Engine control unit EP5		
47	Fuel pump	M6	CC/CV switch		
49	Electric start socket	N	Voltmeter		
54	Reset button PTO HI	N1	Battery charge warning light		
55	Quick coupling m. PTO HI	N2	Thermal-magnetic circuit breaker/		
55A	Quick coupling f. PTO HI		Ground fault interrupter		
56	Hydraulic oil filter	N5	Pre-heat push-button		
59	Battery charger thermal switch	N6	Connector - wire feeder		
59A	Engine thermal switch	O1	Oil pressure warning light/Oil alert		
59B	Aux current thermal switch	P	Welding arc regulator		
59C	Supply thermal switch wire feeder-42V	P8	Water in fuel		
59D	Pre-heater (spark plug) thermal switch	Q1	Starter key		
59E	Supply thermal switch oil/water heater	Q3	Derivation box		
59F	Electropump thermal switch	Q4	Battery charge sockets		
63	No load voltage control	Q7	Welding selector mode		
66	Choke control	R3	Siren		
67A	Auxiliary / welding current control	S	Welding ammeter		
68	Cellulosic electrodes control	S1	Battery		
69A	Voltmeter relay	S3	Engine control unit EP4		
70	Warning lights	S6	Wire feeder supply switch		
71	Selecting knob	S7	Plug 230V singlephase		
72	Load commut. push button	T	Welding current regulator		
73	Starting push button	T4	Dirty air filter warning light/indicator		
74	Operating mode selector	T5	Earth leakage relay		
75	Power on warning light	T7	Analogic instrument V/Hz		
76	Display	U	Current transformer		
79	Wire connection unit	U3	R.P.M. adjuster		
86	Selector	U4	Polarity inverter remote control		
86A	Setting confirmation	U5	Release coil		
87	Fuel valve	U7	Engine control unit EP6		
88	Oil syringe	V	Welding voltage voltmeter		
A3	Insulation monitoring	V4	Polarity inverter control		
A4	Button indicating light 30 l/1' PTO HI	V5	Oil pressure indicator		
B2	Engine control unit EP2	W1	Remote control switch		
B3	E.A.S. connector	W3	Selection push button 30 l/1' PTO HI		





WELDING MODE SELECTION

The Welding Analogue Control unit (WAC) allows two possible control modes:

Constant Current (CC)
Constant Voltage (CV).

The welding option with C.V. characteristic is possible only on those models which support this mode of operation. On such models there is a switch on the front panel of the welder (outside the WAC unit), which allows to select the desired mode.

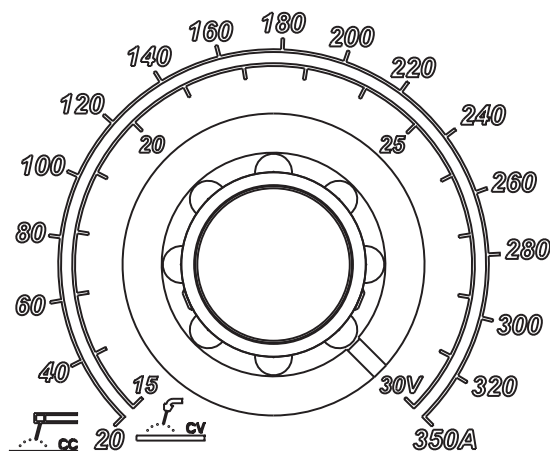
The regulation with C.C. characteristic can be used to weld with various types of electrodes.
The regulation with C.V. characteristic is suitable for the wire welding, both naked and coated.



CC Electrode welding

CV Wire welding

VOLTAGE AND CURRENT REGULATION



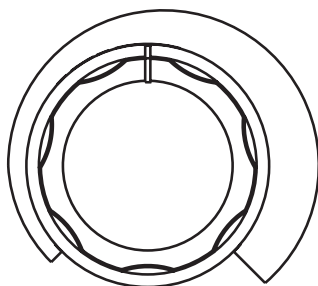
Current regulation

When the CC/CV switch is in CC position the main knob sets the welding current within a range from 20A to 350A.

Voltage regulation

With the CC/CV switch in CV position the main knob sets the welding voltage in a range between 15V and 30V.

ARC FORCE REGULATION



This type of regulation, possible only in CC mode, is accomplished by setting the position of the “arc force” switch and by adjusting the “arc force” knob. Both are located on the WAC panel.

For the welding processes which require a strictly constant current (e.g. TIG), the switch has to be placed in OFF position while the potentiometer position is irrelevant.

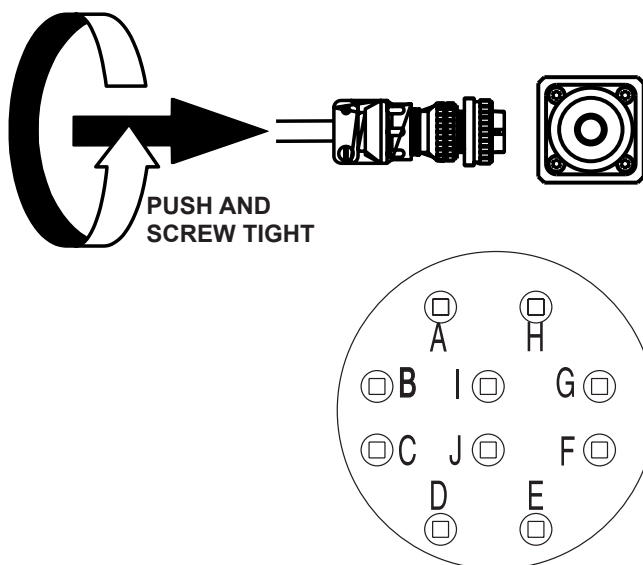
For the welding processes where a certain degree of arc force is suitable, the switch has to be positioned in ON and the potentiometer has to be properly adjusted, depending on the electrode type and the welding position.

REMOTE CONTROL

The WAC can accept the connection to a remote control box (optional) through a circular connector placed on the EAC panel.

After connection to a remote controller, the regulation function of the main knob is automatically switched to the knob on the remote controller.

The following table describes the pin function of the circular connector.



CONTACTS	DESCRIPTION
A (Ground)	To the RC1 potentiometer – GND terminal
B	To the RC1 potentiometer – V_{CONTR} terminal
C	To the RC1 potentiometer – V_{REF} terminal
D	Remote connection presence contact – wire bridge towards (C) cabling side
E	Non connected
F	Non connected
G	Welding enable contact in CV – enables when the contact is closed towards (I)
H	Negative pole of the welding voltage – to monitor the welding voltage by means of an instrument on the wire feeder
I	42Vac $\pm 10\%$ – phase A – for the power supply of the wire feeder
J	42Vac $\pm 10\%$ – phase B – for the power supply of the wire feeder

WIRE FEEDER

The welding control unit WAC is ready for connection to a wire feeder (optional), to be used in C.V. mode. The wire feeder can be supplied from a 42Vac $\pm 10\%$ source through the circular connector of the WAC. In this case, the same connector is used to interface the controller with a contact which enables the welding (conditioned by the torch trigger) and a remote potentiometer located on the wire feeder (where present).

In case of wire feeders directly supplied from the welding power, the operation is anyway possible. With this type of wire feeders there is no need for any connection to the circular connector of the WAC.

VRD FUNCTION (VRD = Voltage Reduction Device)

The VRD function (present only on some versions) fulfils the purpose of drastically reducing the harm which may result to a person from inadvertent contact with the electrode during non-welding pauses. The VRD automatically switches the control mode in CV and sets the voltage to a safe value (typically $<13V$) each time the welding process is interrupted for a period longer than 3 sec.



The VRD function is active only in CC mode.

VRD



The proper operation of the VRD protection (in the models where it is implemented) is monitored by a couple of LEDs: one green and one red. During welding the red LED indicates that a condition of electrical risk is present. When the welding is stopped for more than 3 sec. the green LED turns on (and the red LED turns off) indicating that the VRD function is active. This means that the voltage on the electrode has been lowered to a safe value.



This symbol (Norm EN 60974-1 security standards for arc welders) signifies that the welder can be used in areas with increased risk of electrical shock.



ATTENTION

The welding sockets, after the machine is started (see page M 21), also with no cables, are anyway under voltage.



ATTENTION

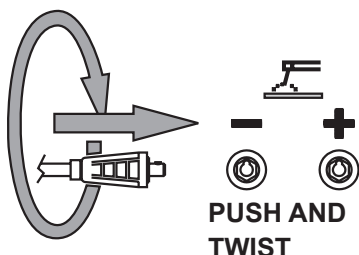
The areas, access of which is forbidden to unqualified personnel, are:

- the control switchboard (front) - the exhaust of the endothermic engine - the welding process.

Check at the beginning of any work the electric parameters and/or the control placed on the front.

Make sure that the ground connection (12) is efficient (when this connection is present, being necessary). See page M20.

Fully insert the welding cable plugs into the corresponding sockets turning them clockwise to lock them in position.



Make sure that the ground clamp, whose cable must be connected to the + or - terminal, depending on the type of electrode, makes a good connection and is near to the welding position. Pay attention to the two polarities of the welding circuit, which must not come in electric contact between themselves



REMOTE CONTROL

See page M 38



ATTENTION

To reduce the risk of electromagnetic interferences, use the minimum length of welding cables and keep them near and down (ex. on the floor).

The welding operations must take place far from any sensitive electronic device. Make sure that the unit is earthed (see M20). In case the interference should last, adapt further disposition, such as: move the unit, use screened cables, line filters, screen the entire work area.

In case the above mentioned operations are non sufficient, please contact our Technical Assistance Service.



CAUTION

With a welding cable length up to 20 m is suggested a section of 35 mm²; with longer cables a bigger section is required.





WARNING

It is strictly forbidden to connect the group to the public mains and/or to any other source of electric power.

GENERATION IN AC (ALTERNATING CURRENT)

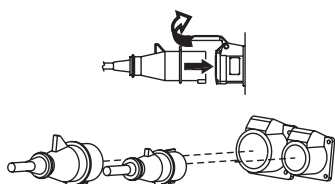
Make certain of the efficiency of the ground connection (12). - See page M20 -.

Position the GFI switch to ON.

⚡ Voltage is now immediately available to the AC sockets.

Verify that the voltmeter displays the nominal voltage value (at no load it is close to +10% of the nominal value).

Connect the electric devices to be powered to the AC sockets, using suitable plugs and cables in good condition.



⚡ Verify that the electrical characteristics (voltage/frequency/power) of the device being powered are compatible with those of the generator.

Low frequency and/or voltage can irreparably damage some electrical devices.

Verify that the ground lead of the electrical appliance/tool to be powered is correctly connected to the terminal of the plug.

⚡ For double insulation devices with the symbol , the plug's ground terminal does not need to be grounded.

THERMAL PROTECTION

The monophase outputs are protected against overloads by the thermal protection (59B).

When the rated current is exceeded, the protection intervenes to cut off the voltage to the AC socket.

⚡ **Notes:** the intervention of the thermal protection is not instantaneous, but reacts according to an overcurrent/time characteristic, whereby the greater the overcurrent the quicker the intervention. In case of intervention by the protection device, verify that the total power for the loads connected does not exceed the declared rating and decrease if necessary. Disconnect the loads and wait a few



CIRCUIT BREAKER



minutes to allow the thermal protection to cool down.

Before resetting by pressing the central button and then

connect the load again.

If the protection should intervene again, replace it with another one with matching intervention current specifications and/or contact the Service Department.

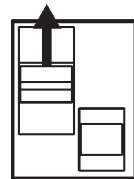
⚡ **Note:** do not forcibly hold the central button of the thermal protection device to prevent its intervention, as this could irreparably **damage** the unit's alternator.

⚡ **Note:** the three phase output does not require any protection against overcurrents, since it uses a self-protecting asynchronous type alternator.

GROUND FAULT INTERRUPTOR SWITCH

The high-sensitivity ground fault interruptor switch [G.F.I.] (30mA) (D), guarantees protection against indirect contacts due to faulty ground currents.

When the G.F.I. switch picks up a faulty ground current that is higher than 30mA, it intervenes by immediately cutting off voltage to the AC sockets.



In case of intervention by this protection device, reset the G.F.I. switch by moving the lever to the ON position. In case of another intervention, verify that there are no faults in the tools connected, or replace the G.F.I. switch with another one of matching specifications and/or contact the Service Department.

⚡ **Notes:** Verify the operation of the G.F.I. switch at least once a month by pressing the TEST button. The generator must be running and the G.F.I. lever in the ON position.

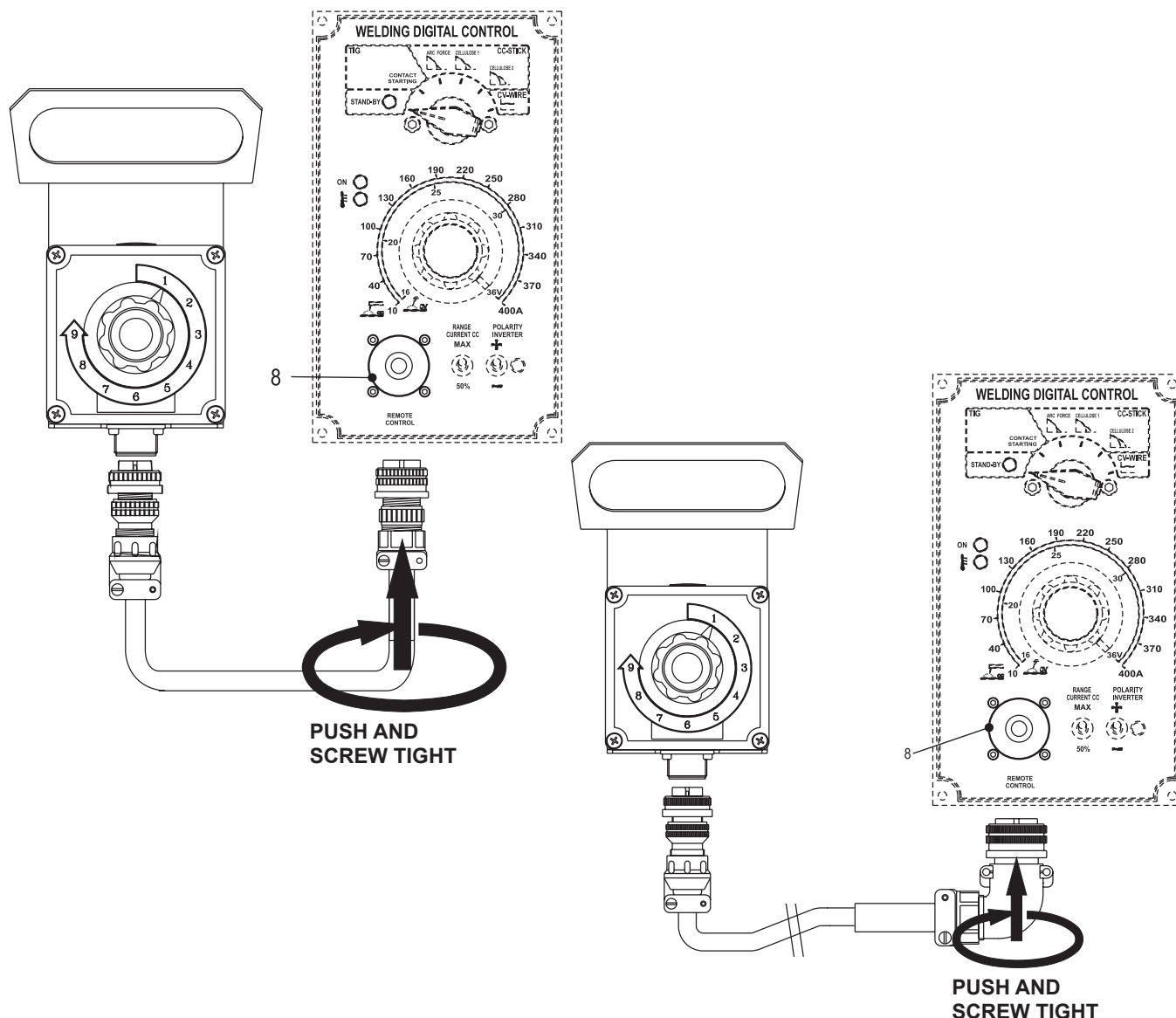
SIMULTANEOUS USE

The welder's alternator permits the simultaneous use of auxiliary power and welding current. The auxiliary power available to the AC plugs (15) diminishes as the welding current drawn increases.

The table on page M1.6 TECHNICAL SPECIFICATIONS shows the amount of auxiliary power available as the welding current varies.

COMBINED USE

The output available from the various auxiliary power sockets is limited, not only by the declared output of the unit but also by the capacity of each individual socket.



The remote control RC, which regulates the welding current in the CC (STICK welding) mode and the welding voltage in the CV (MIG/MAG welding), is connected to the front panel by means of a multipole connector.

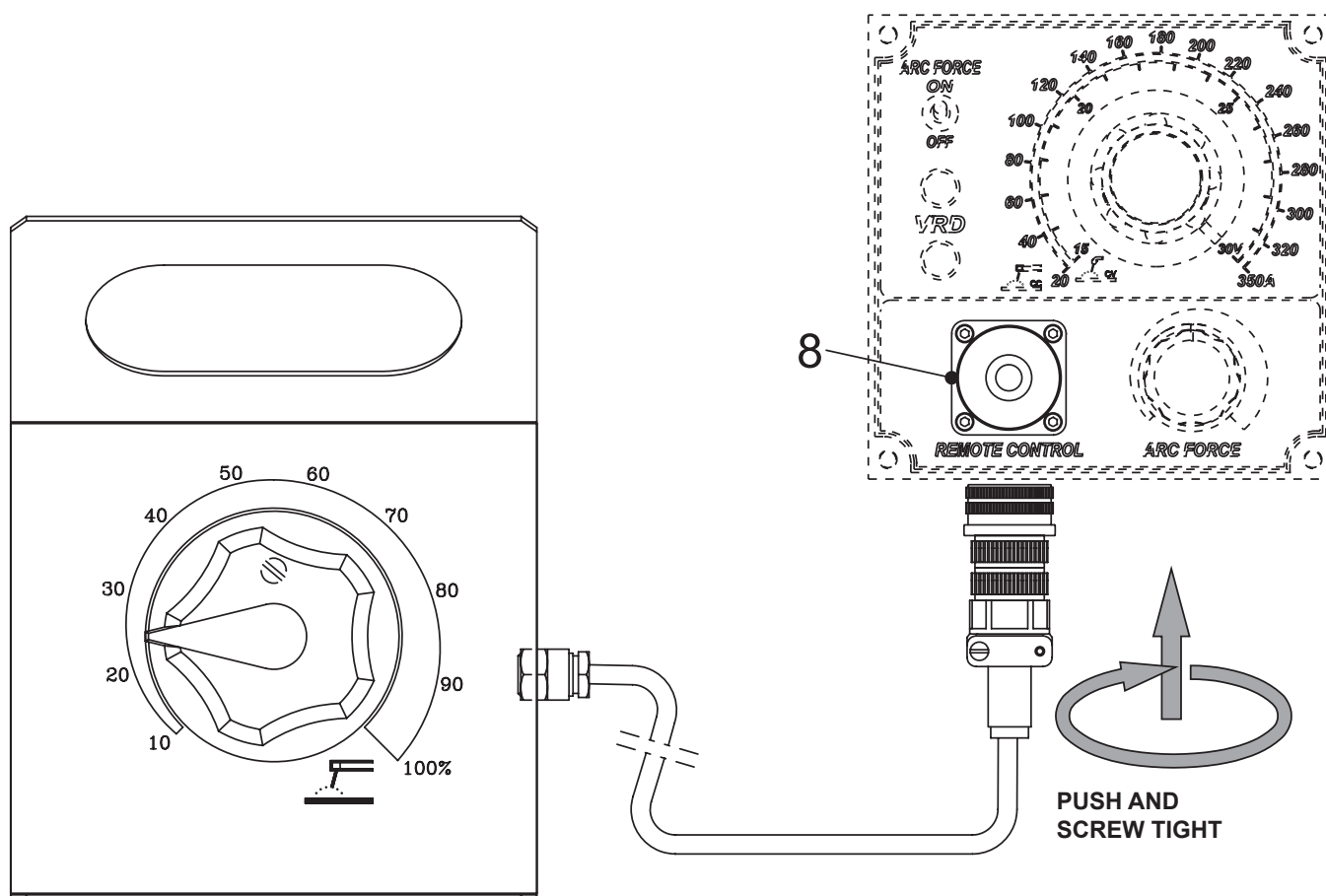
When the remote control is connected to the remote control connector (8), it is functional and automatically excludes the front panel regulation. The remote control can also be connected to the connector on the wire feeder front panel but in this case it is necessary to switch the wire feeder commutator so it can operate.

Adjust the welding current control knob to the correct current for the diameter and type of electrode being welded.



ATTENTION

When the RC is not used, it is necessary to disconnect the multipole connector



The remote control device for regulating the welding current is connected to the front panel by means of a multipole connector.

When the remote control is connected to the remote control connector (8), it is functional and automatically excludes the front panel regulation.

Position welding current adjusting (T) knob at the necessary current value for the diameter and type of electrode.

DC Supply, Battery Plant	8V up to 36 Vdc
Static Outputs (short circuit proof)	200 mAdc
Key Switch Rating	30 A (30 secs)/80 A (5 secs)
Dimensions-DIN 96 Size	72X72X55 (ex switch /key)
Weight	300 gr
Operating Temperature	-30° C /+70° C
Operating Humidity	96% (non-condensing)

PROBLEM	ASSOCIATED SYMPTOMS	POSSIBLE CAUSE	VERIFICATIONS	WHAT TO DO
P1 No welding arc (applicable only to machines with WAC)	No open circuit voltage	Failed power supply within the welding control board (WAC)	With the machine running, by means of a multimeter, check if there is a voltage of $5VDC \pm 0,125V$ between the contacts A (-) and C (+) on the circular connector of the WAC. In case of lack of voltage or condition not satisfied consider the suggested action.	Replace the welding control board of the WAC
P2 No welding arc (applicable only to machines without WAC)	No open circuit voltage	Failed power supply within the welding control board (WAC)	With the machine running, by means of a multimeter, check if there is a voltage of $5VDC \pm 0,125V$ between the contacts 1 (-) and 2 (+) on the circular connector of the front panel, after having set the remote control switch in ON position. In case of lack of voltage or condition not satisfied consider the suggested action.	Replace the welding control board
P3 No welding arc	No open circuit voltage	Failure in the control or drive circuits of the welding control board	In order to check the proper operation of these circuits it is necessary to use specific test and troubleshooting tools. Anyway, a visual inspection could be enough to localise possible damages caused by a failure. In case of evidence of damages consider the suggested action.	Replace the welding control board ATTENTION For the CT 230 only, there is a risk of failure propagation towards the chopper. Before replacing this board please check that the chopper works properly. If not replace both.
P4 Lack of welding current control	Full welding power (without current control) regardless of the knob position	Failure in the control or drive circuits of the welding control board	In order to check the proper operation of these circuits it is necessary to use specific test and troubleshooting tools. Anyway, a visual inspection could be enough to localise possible damages caused by a failure. In case of evidence of damages consider the suggested action.	Replace the welding control board ATTENTION For the CT 230 only, there is a risk of failure propagation towards the chopper. Before replacing this board please check that the chopper works properly. If not replace both.
P5 No welding arc	No open circuit voltage or welding available current low or negligible. With auto-idle installed, the r.p.m. never slows-down to idle.	Hall sensor failed	Disconnect the Hall sensor from the welding control board (on the WAC or within the electrical box, as applicable) and check that, in this condition, the open circuit voltage reading is correct. When the VRD is installed, the voltage goes to VRD value. If a resistive load bank is available, check that it is possible draw power (do not exceed 100A). If the Auto-idle is installed, in this condition the machine does not exit the idle. In any case, don't try to weld with the Hall sensor disconnected. If the test gives positive result, consider the indicated action.	Replace the Hall sensor

PROBLEM	ASSOCIATED SYMPTOMS	POSSIBLE CAUSE	VERIFICATIONS	WHAT TO DO
P6 Lack of voltage control in CV mode (applicable to the CC-CV machines provided with filter board)	The open circuit voltage in CV mode is the same as for the CC mode, regardless of the control knob position	Failure in the EMC filter board on the welding sockets	Check by means of a multimeter (stopped machine) the resistance value between positive welding socket and the corresponding faston connector on the filter board. The condition to check is: ohmic value between + welding socket and + board faston (the one to which the red cables are connected) < 4 ohm In case of condition not satisfied take the indicated corrective action.	Replace the EMC filter board
P7 No welding arc (applicable to the machines provided with the filter board on the welding sockets)	The open circuit voltage is zero	Failure in the EMC filter board on the welding sockets	Check by means of a multimeter (stopped machine) the resistance value between positive welding socket and the corresponding faston connector on the filter board. The condition to check is: ohmic value between - welding socket and - board faston (the one to which the black cables are connected) < 4 ohm In case of condition not satisfied take the indicated corrective action.	Replace the EMC filter board
P8 Minimum welding current in CC mode too high (applicable to the machines provided with the filter board on the welding sockets)	The welding current in CC mode with the knob at beginning of scale is too high and changes when turning the arc force knob (if present, switch in ON position)	Failure in the EMC filter board on the welding sockets	Check by means of a multimeter (stopped machine) the resistance value between positive welding socket and the corresponding faston connector on the filter board. The condition to check is: ohmic value between + welding socket and + board faston (the one to which the red cables are connected) < 4 ohm In case of condition not satisfied take the indicated corrective action.	Replace the EMC filter board
P9 Minimum welding current in CC mode too high	The welding current in CC mode with the knob at beginning of scale is too high and changes when turning the arc force knob (if present, switch in ON position)	Cable interruption between the WAC or the welding control board (as applicable depending on the machine type) and the welding sockets	With the machine stopped, extract the connector plugged to J1 of the WAC / Welding control board (as applicable depending on the machine type). Check by means of a multimeter the continuity between pin 6 of the connector and the positive welding socket. The resistive value shall be < 4 ohm if there is a filter board behind the sockets, otherwise shall be < 0.5 ohm. In case of condition not satisfied take the indicated corrective action.	Fix the cabling or replace it.
P10 No welding arc	The open circuit voltage is zero	Cable interruption between the WAC or the welding control board (as applicable depending on the machine type) and the welding sockets	With the machine stopped, extract the connector plugged to J1 of the WAC / Welding control board (as applicable depending on the machine type). Check by means of a multimeter the continuity between pin 5 of the connector and the negative welding socket. The resistive value shall be < 4 ohm if there is a filter board behind the sockets, otherwise shall be < 0.5 ohm. In case of condition not satisfied take the indicated corrective action	Fix the cabling or replace it.

PROBLEM	ASSOCIATED SYMPTOMS	POSSIBLE CAUSE	VERIFICATIONS	WHAT TO DO
P11 Lack of welding current control	Full welding power (without current control) regardless of the knob position. When the auto-idle is installed, the machine remains at low r.p.m.	Hall sensor failed	In order to check the proper operation of the Hall sensor it is necessary to use specific test and troubleshooting tools. Anyway, a visual inspection could be enough to localise possible damages, with particular reference to possible wear of the cable end coming out of the Hall sensor potting. Please check also the connector contacts crimping at the opposite end of the cable. In case of evidence of damages consider the suggested action	Replace the Hall sensor
P12 Lack of welding current control (applicable only to CT 350)	Full welding power (without current control) regardless of the knob position	Chopper and/or driver board failed	Disconnect the chopper cable from the connector J3 of the WAC. Check that the open circuit voltage is < 1V. If not put a light resistive load at the welding output (few kohms are enough) and check again the previous condition. If it is not satisfied the chopper is faulty. If a welding load bank and a clamp DC amp meter are available, another test can be done to localise the failed section/s. To this purpose set the load bank for a current of a few tens of amps and measure the current at the output of each chopper section (the group of cables which connect the chopper to one end of the welding current leveling reactor). The sections through which the current flows are failed or improperly driven by the driver board. If the test confirms this type of failure consider the suggested corrective action.	Replace the chopper and the driver board
P13 Lack of welding current control (applicable only to CT 230)	Full welding power (without current control) regardless of the knob position	Chopper faulty	Disconnect the chopper cable from the connector J3 of the WAC. Check that the open circuit voltage is < 1V. If not put a light resistive load at the welding output (few kohms are enough) and check again the previous condition. If it is not satisfied the chopper is faulty. In this case consider the suggested corrective action.	Replace the chopper
P14 Knob irregular or missing current adjustment	When turning the knob the current setting (and the voltage setting, if applicable) do not change or change irregularly	The potentiometer which regulates the welding current (and the welding voltage, when applicable) is faulty	Check if the regulation through remote control works properly. If confirmed, consider the suggested corrective action.	Replace the potentiometer

 WARNING		
	• Have qualified personnel do maintenance and troubleshooting work. • Stop the engine before doing any work inside the machine. If for any reason the machine must be operated while working inside, pay attention moving parts, hot parts (exhaust manifold and muffler, etc.) electrical parts which may be unprotected when the machine is open. • Remove guards only when necessary to perform maintenance, and replace them when the maintenance requiring their removal is complete. • Use suitable tools and clothes. • Do not modify the components if not authorized. - See pag. M1.1 -	
MOVING PARTS can injure		HOT surface can hurt you

NOTE

By maintenance at care of the utilizer we intend all the operatios concerning the verification of mechanical parts, electrical parts and of the fluids subject to use or consumption during the normal operation of the machine.

For what concerns the fluids we must consider as maintenance even the periodical change and or the refills eventually necessary.

Maintenance operations also include machine cleaning operations when carried out on a periodic basis outside of the normal work cycle.

The repairs **cannot be considered** among the maintenance activities, i.e. the replacement of parts subject to occasional damages and the replacement of electric and mechanic components consumed in normal use, by the Assistance Authorized Center as well as by manufacturer.

The replacement of tires (for machines equipped with trolleys) must be considered as repair since it is not delivered as standard equipment any lifting system.

The periodic maintenance should be performed according to the schedule shown in the engine manual. An optional hour counter (M) is available to simplify the determination of the working hours.

 IMPORTANT	
	In the maintenance operations avoid that polluting substances, liquids, exhausted oils, etc. bring damage to people or things or can cause negative effects to surroindings, health or safety respecting completely the laws and/or dispositions in force in the place.

ENGINE and ALTERNATOR

PLEASE REFER TO THE SPECIFIC MANUALS PROVIDED.

Every engine and alternator manufacturer has



maintenance intervals and specific checks for each model: it is necessary to consult the specific engine or alternator USER AND MAINTENANCE manual.

VENTILATION

Make certain there are no obstructions (rags, leaves or other) in the air inlet and outlet openings on the machine, alternator and motor.

ELECTRICAL PANELS

Check condition of cables and connections daily. Clean periodically using a vacuum cleaner, **DO NOT USE COMPRESSED AIR.**

DECALS AND LABELS

*All warning and decals should be checked once a year and **replaced** if missing or unreadable.*

STRENUOUS OPERATING CONDITIONS

Under extreme operating conditions (frequent stops and starts, dusty environment, cold weather, extended periods of no load operation, fuel with over 0.5% sulphur content) do maintenance more frequently.

BATTERY WITHOUT MAINTENANCE DO NOT OPEN THE BATTERY

The battery is charged automatically from the battery charger circuit supplied with the engine.

Check the state of the battery from the colour of the warning light which is in the upper part.

- Green colour: battery OK
- Black colour: battery to be recharged
- White colour: battery to be replaced

 NOTE	
THE ENGINE PROTECTION NOT WORK WHEN THE OIL IS OF LOW QUALITY BECAUSE NOT CHARGED REGULARLY AT INTERVALS AS PRESCRIBED IN THE OWNER'S ENGINE MANUAL.	

In case the machine should not be used for more than 30 days, make sure that the room in which it is stored presents a suitable shelter from heat sources, weather changes or anything which can cause rust, corrosion or damages to the machine.

 Have **qualified** personnel prepare the machine for storage.

GASOLINE ENGINE

Start the engine: It will run until it stops due to the lack of fuel.

Drain the oil from the engine sump and fill it with new oil (see page M25).

Pour about 10 cc of oil into the spark plug hole and screw the spark plug, after having rotated the crankshaft several times.

Rotate the crankshaft slowly until you feel a certain compression, then leave it.

In case the battery, for the electric start, is assembled, disconnect it.

Clean the covers and all the other parts of the machine carefully.

Protect the machine with a plastic hood and store it in a dry place.

DIESEL ENGINE

For short periods of time it is advisable, about every 10 days, to make the machine work with load for 15-30 minutes, for a correct distribution of the lubricant, to recharge the battery and to prevent any possible blocking of the injection system.

For long periods of inactivity, turn to the after sales service of the engine manufacturer.

Clean the covers and all the other parts of the machine carefully.

Protect the machine with a plastic hood and store it in a dry place.

In case of necessity for first aid and of fire prevention, see page. M2.5.



IMPORTANT



In the storage operations avoid that polluting substances, liquids, exhausted oils, etc. bring damage to people or things or can cause negative effects to surroundings, health or safety respecting completely the laws and/or dispositions in force in the place.

Have **qualified** personnel disassemble the machine and dispose of the parts, including the oil, fuel, etc., in a correct manner when it is to be taken out of service.

In case of necessity for first aid and fire prevention, see page M2.5.

As cust off we intend all operations to be made, at utilizer's care, at the end of the use of the machine. This comprises the dismantling of the machine, the subdivision of the several components for a further reutilization or for getting rid of them, the eventual packing and transportation of the eliminated parts up to their delivery to the store, or to the bureau encharged to the cust off or to the storage office, etc.

The several operations concerning the cust off, involve the manipulation of fluids potentially dangerous such as: lubricating oil and battery electrolyte.

The dismantling of metallic parts liable to cause injuries or wounds, must be made wearing heavy gloves and using suitable tools.

The getting rid of the various components of the machine must be made accordingly to rules in force of law a/o local rules.

Particular attention must be paid when getting rid of:

lubricating oils, battery electrolyte, and inflammable liquids such as fuel, cooling liquid.

The machine user is responsible for the observance of the norms concerning the environment conditions with regard to the elimination of the machine being cust off and of all its components.

In case the machine should be cust off without any previous disassembly it is however compulsory to remove:

- tank fuel
- engine lubricating oil
- cooling liquid from the engine
- battery

NOTE: BCS is involved with custing off the machine **only** for the second hand ones, when not reparable. This, of course, after authorization.



IMPORTANT



In the cust-off operations avoid that polluting substances, liquids, exhausted oils, etc. bring damage to people or things or can cause negative effects to surroundings, health or safety respecting completely the laws and/or dispositions in force in the place.



The information here below are to be intended only as indicative since the above norm is much larger.
For further details please see the specific norms and/or the manufacturers of the product to be used in the welding process.

RUTILE ELECTRODES: F 6013

Easily removable fluid slag, suitable for welding in all positions.

Rutile electrodes weld in d.c. with both polarities (electrode holder at + or -) and in a.c..

Suitable for soft steels R-38/45 kg/mm². Also for soft steels of lower quality.

BASIC ELECTRODES: E 7015

Basic electrodes work only in d.c. with inverse polarity (+ on the electrode holder) ; there are also types for a.c.

Suitable for impure carbon steels. Weld in all position.

HIGH YIELD BASIC ELECTRODES: E 7018

The iron contained in the coating increases the quality of metal added. Good mechanical properties. Weld in all position. Electrode holder at + (inverse polarity). Wld deposit of nice aspect, also vertical. Workable; high yield.

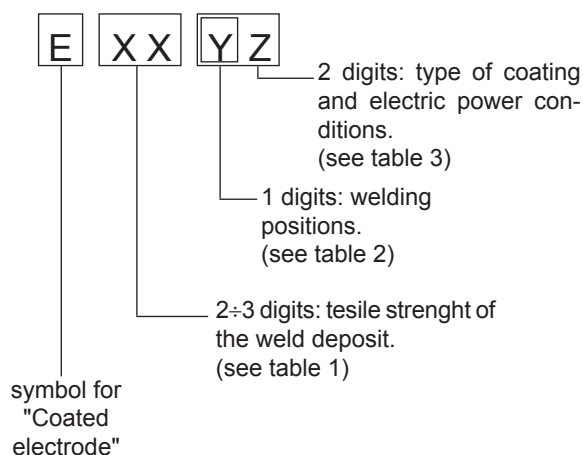
Suitable for steels with high contents of sulphur (impurities).

CELLULOSIC ELECTRODES: E 6010

Cellulosic electrodes weld only in d.c. with polarity + electrode holder - ground clamp.

Special for steels run on pipes with R max 55 kg/mm². Weld in all position. volatile slag.

ELECTRODES IDENTIFICATION ACCORDING TO A.W.S. STANDARDS



Number	Strenght	
	K.s.l.	Kg/mm ²
60	60.000	42
70	70.000	49
80	80.000	56
90	90.000	63
100	100.000	70
110	110.000	77
120	120.000	84

Table 1

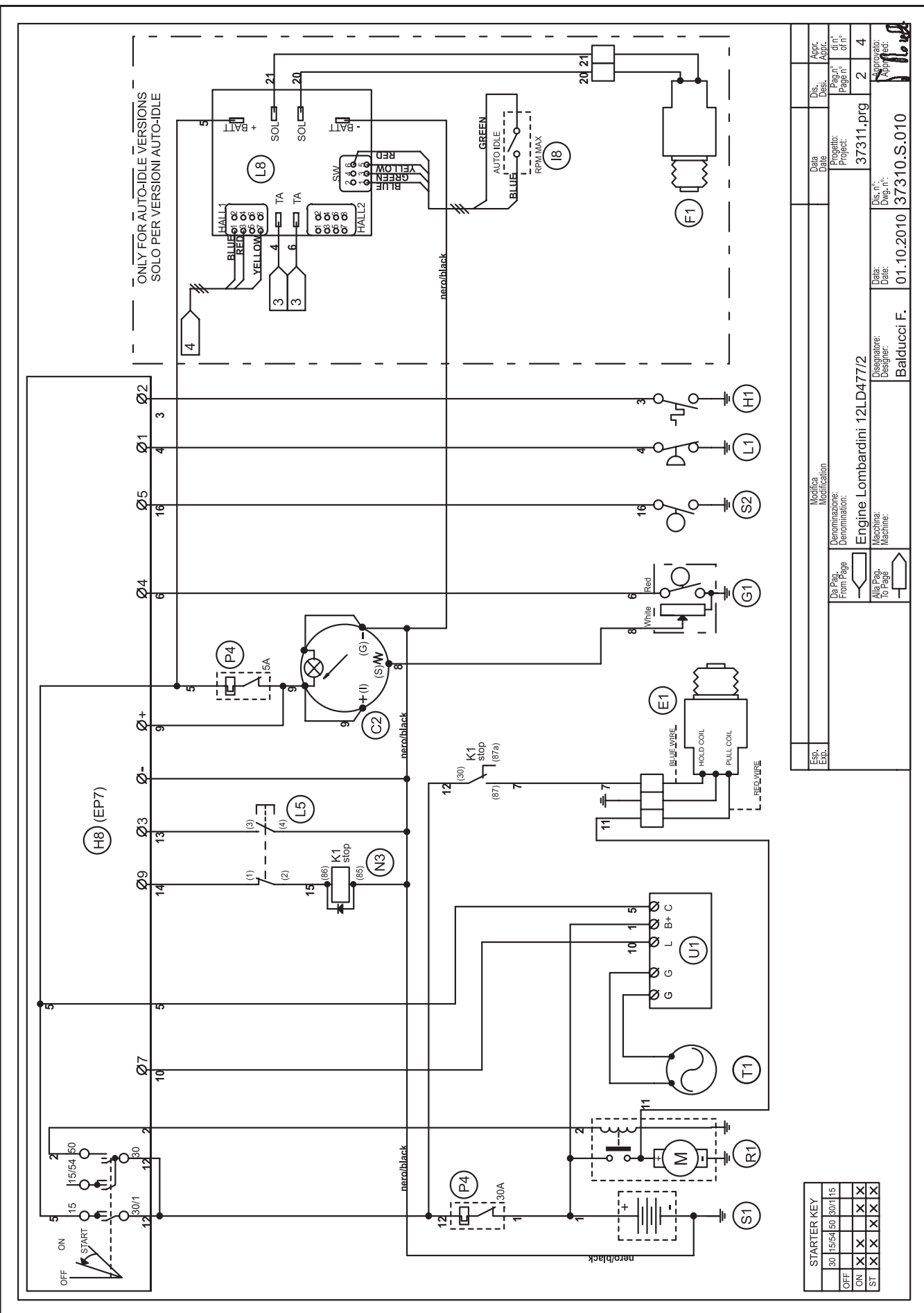
1	for all positions
2	for plane and verticl
3	for plane posotion only

Table 2

N°	Descrizione
10	Cellulose electrodes for d.c.
11	Cellulose electrodes for a.c.
12	Rutile electrode for d.c.
13	Rutile electrode for a.c.
14	High yield rutile electrodes
15	Basic electrodes for d.c.
16	Basic electrodes for c.a.
18	High yield basic electrodes for d.c. (inverse polarity)
20	Acid electrodes for flat or front position welding for d.c. (- pole) and for a.c.
24	High yield rutile electrodes for flat or front plane position welding for d.c. and a.c.
27	High yield acid electrodes for flat or front plane position welding for d.c. (- pole) and a.c..
28	High yield basic electrodes for flat or front plane position welding for d.c. (inverse polarity)
30	Extra high yield acid electrodes, extra high penetration if required, for flat position welding only for d.c. (- pole) and a.c.

Table 3

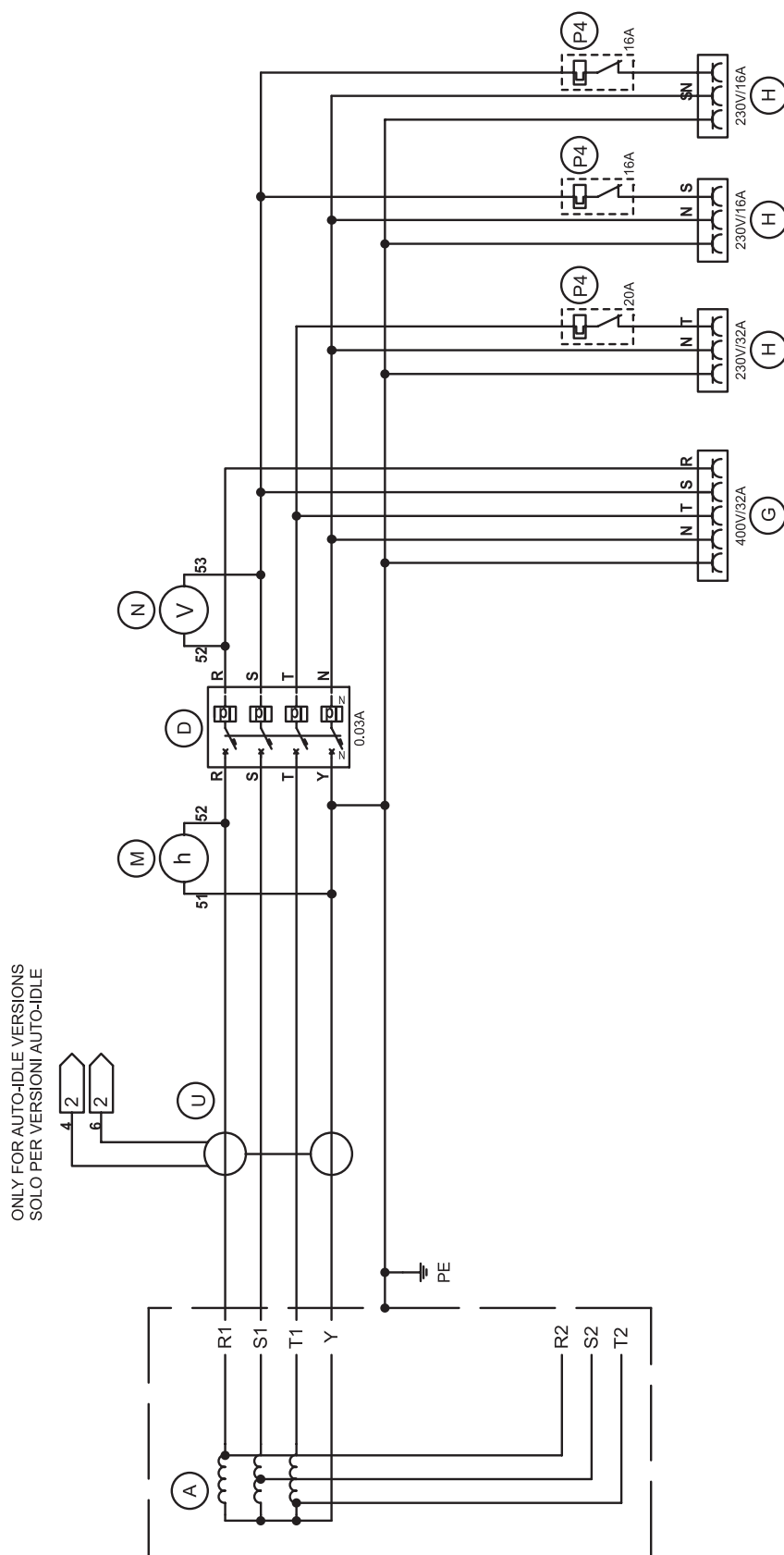
A	: Alternator	F3	: Stop push-button	L6	: Choke button
B	: Wire connection unit	G3	: Ignition coil	M6	: Switch CC/CV
C	: Capacitor	H3	: Spark plug	N6	: Connector – wire feeder
D	: G.F.I.	I3	: Range switch	O6	: 420V/110V 3-phase transformer
E	: Welding PCB transformer	L3	: Oil shut-down button	P6	: Switch IDLE/RUN
F	: Fuse	M3	: Battery charge diode	Q6	: Hz/V/A analogic instrument
G	: 400V 3-phase socket	N3	: Relay	R6	: EMC filter
H	: 230V 1phase socket	O3	: Resistor	S6	: Wire feeder supply switch
I	: 110V 1-phase socket	P3	: Sparkler reactor	T6	: Wire feeder socket
L	: Socket warning light	Q3	: Output power unit	U6	: DSP chopper PCB
M	: Hour-counter	R3	: Electric siren	V6	: Power chopper supply PCB
N	: Voltmeter	S3	: E.P.4 engine protection	Z6	: Switch and leds PCB
P	: Welding arc regulator	T3	: Engine control PCB	W6	: Hall sensor
Q	: 230V 3-phase socket	U3	: R.P.M. electronic regulator	X6	: Water heater indicator
R	: Welding control PCB	V3	: PTO HI control PCB	Y6	: Battery charge indicator
S	: Welding current ammeter	Z3	: PTO HI 20 l/min push-button	A7	: Transfer pump selector AUT-0-MAN
T	: Welding current regulator	W3	: PTO HI 30 l/min push-button	B7	: Fuel transfer pump
U	: Current transformer	X3	: PTO HI reset push-button	C7	: "GECO" generating set test
V	: Welding voltage voltmeter	Y3	: PTO HI 20 l/min indicator	D7	: Flooting with level switches
Z	: Welding sockets	A4	: PTO HI 30 l/min indicator	E7	: Voltmeter regulator
X	: Shunt	B4	: PTO HI reset indicator	F7	: WELD/AUX switch
W	: D.C. inductor	C4	: PTO HI 20 l/min solenoid valve	G7	: Reactor, 3-phase
Y	: Welding diode bridge	D4	: PTO HI 30 l/min solenoid valve	H7	: Switch disconnecter
A1	: Arc striking resistor	E4	: Hydraulic oil pressure switch	I7	: Solenoid stop timer
B1	: Arc striking circuit	F4	: Hydraulic oil level gauge	L7	: "VODIA" connector
C1	: 110V D.C./48V D.C. diode bridge	G4	: Preheating glow plugs	M7	: "F" EDC4 connector
D1	: E.P.1 engine protection	H4	: Preheating gearbox	N7	: OFF-ON-DIAGN. selector
E1	: Engine stop solenoid	I4	: Preheating indicator	O7	: DIAGNOSTIC push-button
F1	: Acceleration solenoid	L4	: R.C. filter	P7	: DIAGNOSTIC indicator
G1	: Fuel level transmitter	M4	: Heater with thermostat	Q7	: Welding selector mode
H1	: Oil or water thermostat	N4	: Choke solenoid	R7	: VRD load
I1	: 48V D.C. socket	O4	: Step relay	S7	: 230V 1-phase plug
L1	: Oil pressure switch	P4	: Circuit breaker	T7	: V/Hz analogic instrument
M1	: Fuel warning light	Q4	: Battery charge sockets	U7	: Engine protection EP6
N1	: Battery charge warning light	R4	: Sensor, cooling liquid temperature	V7	: G.F.I. relay supply switch
O1	: Oil pressure warning light	S4	: Sensor, air filter clogging	Z7	: Radio remote control receiver
P1	: Fuse	T4	: Warning light, air filter clogging	W7	: Radio remote control transmitter
Q1	: Starter key	U4	: Polarity inverter remote control	X7	: Isometer test push-button
R1	: Starter motor	V4	: Polarity inverter switch	Y7	: Remote start socket
S1	: Battery	Z4	: Transformer 230/48V	A8	: Transfer fuel pump control
T1	: Battery charge alternator	W4	: Diode bridge, polarity change	B8	: Ammeter selector switch
U1	: Battery charge voltage regulator	X4	: Base current diode bridge	C8	: 400V/230V/115V commutator
V1	: Solenoid valve control PCBT	Y4	: PCB control unit, polarity inverter	D8	: 50/60 Hz switch
Z1	: Solenoid valve	A5	: Base current switch	E8	: Cold start advance with temp. switch
W1	: Remote control switch	B5	: Auxiliary push-button ON/OFF	F8	: START/STOP switch
X1	: Remote control and/or wire feeder socket	C5	: Accelerator electronic control	G8	: Polarity inverter two way switch
Y1	: Remote control plug	D5	: Actuator	H8	: Engine protection EP7
A2	: Remote control welding regulator	E5	: Pick-up	I8	: AUTOIDLE switch
B2	: E.P.2 engine protection	F5	: Warning light, high temperature	L8	: AUTOIDLE PCB
C2	: Fuel level gauge	G5	: Commutator auxiliary power	M8	: A4E2 ECM engine PCB
D2	: Ammeter	H5	: 24V diode bridge	N8	: Remote emergency stop connector
E2	: Frequency meter	I5	: Y/▲ commutator	O8	: V/A digital instruments and led VRD PCB
F2	: Battery charge transformer	L5	: Emergency stop button	P8	: Water in fuel
G2	: Battery charge PCB	M5	: Engine protection EP5	Q8	: Battery disconnect switch
H2	: Voltage selector switch	N5	: Pre-heat push-button	R8	: Inverter
I2	: 48V a.c. socket	O5	: Accelerator solenoid PCB	S8	: Overload led
L2	: Thermal relay	P5	: Oil pressure switch	T8	: Main IT/TN selector
M2	: Contactor	Q5	: Water temperature switch	U8	: NATO socket 12V
N2	: G.F.I. and circuit breaker	R5	: Water heater	V8	: Diesel pressure switch
O2	: 42V EEC socket	S5	: Engine connector 24 poles	Z8	: Remote control PCB
P2	: G.F.I. resistor	T5	: Electronic GFI relais	W8	: Pressure turbo protection
Q2	: T.E.P. engine protection	U5	: Release coil, circuit breaker	X8	: Water in fuel sender
R2	: Solenoid control PCBT	V5	: Oil pressure indicator	Y8	: EDC7-UC31 engine PCB
S2	: Oil level transmitter	Z5	: Water temperature indicator	A9	: Low water level sender
T2	: Engine stop push-button T.C.1	W5	: Battery voltmeter	B9	: Interface card
U2	: Engine start push-button T.C.1	X5	: Contactor, polarity change	C9	: Limit switch
V2	: 24V c.a. socket	Y5	: Commutator/switch, series/parallel	D9	: Starter timing card
Z2	: Thermal magnetic circuit breaker	A6	: Commutator/switch	E9	: Liquid pouring level float
W2	: S.C.R. protection unit	B6	: Key switch, on/off	F9	: Under voltage coil
X2	: Remote control socket	C6	: QEA control unit	G9	: Low water level warning light
Y2	: Remote control plug	D6	: Connector, PAC	H9	: Chopper driver PCB
A3	: Insulation monitoring	E6	: Frequency rpm regulator	I9	:
B3	: E.A.S. connector	F6	: Arc-Force selector	L9	:
C3	: E.A.S. PCB	G6	: Device starting motor		
D3	: Booster socket	H6	: Fuel electro pump 12V c.c.		
E3	: Open circuit voltage switch	I6	: Start Local/Remote selector		

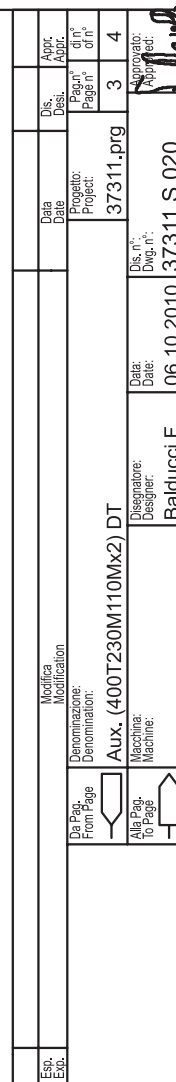


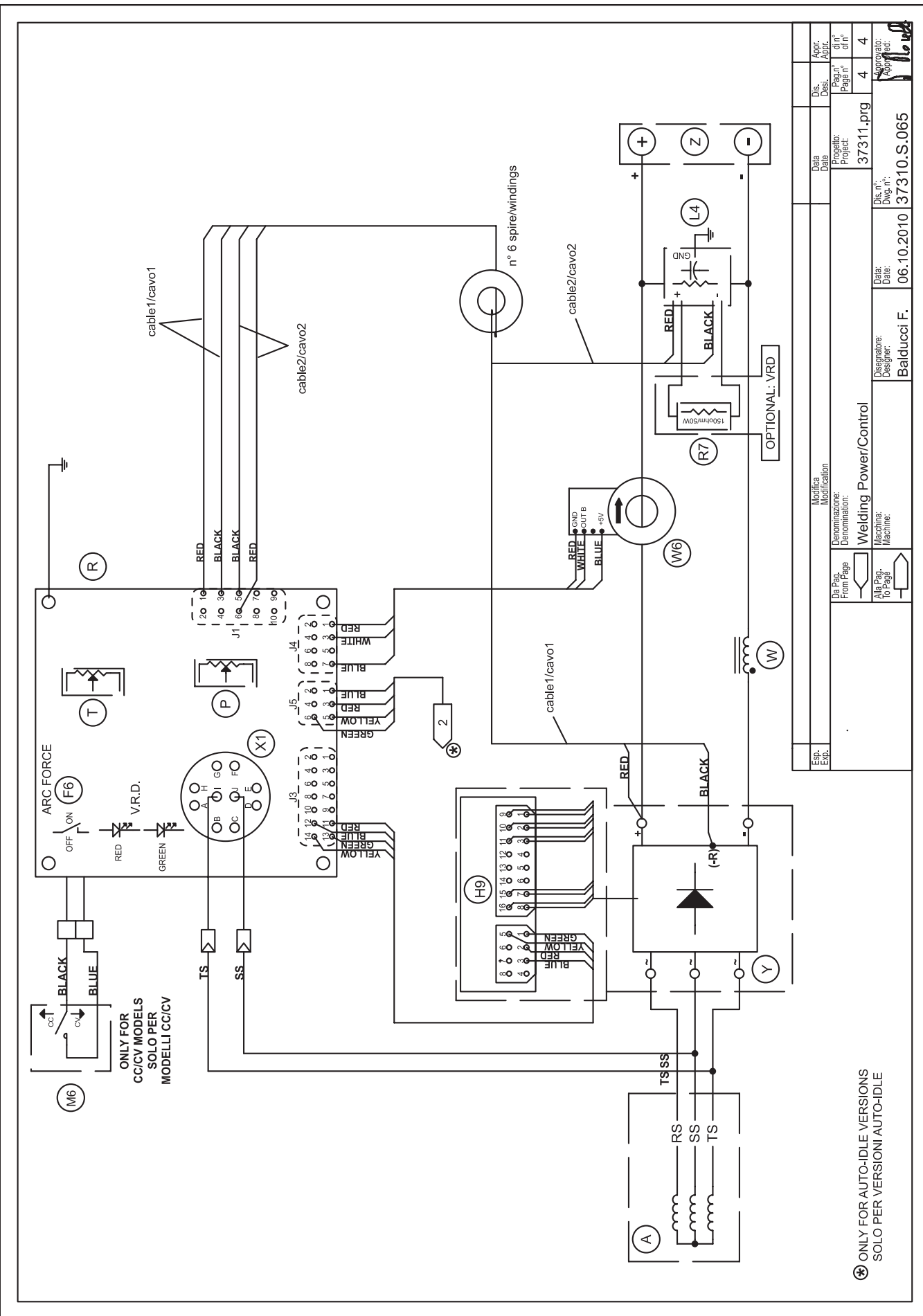
- (I) Schema elettrico
 (GB) Electric diagram
 (F) Schemas electriques

CT 350 LSX
CT 350 LSX CC/CV

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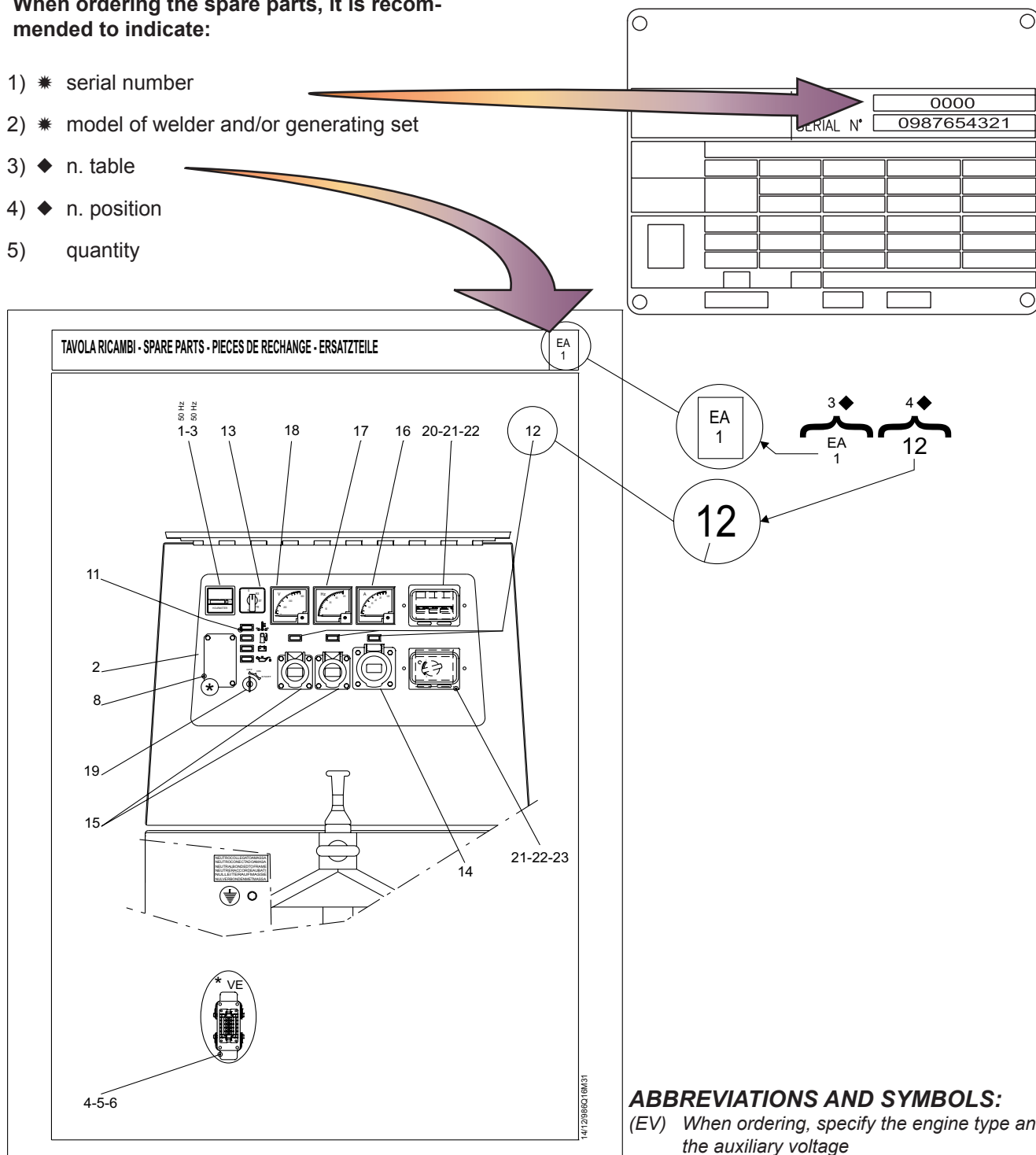




To keep the machine in full working order, when replacement spare parts is required, always ask for genuine parts only.

👉 The requested data are to be found on the data plate located on the machine structure, quite visible and easy to consult. 🌟

- 1) * serial number
- 2) * model of welder and/or generating set
- 3) ♦ n. table
- 4) ♦ n. position
- 5) quantity

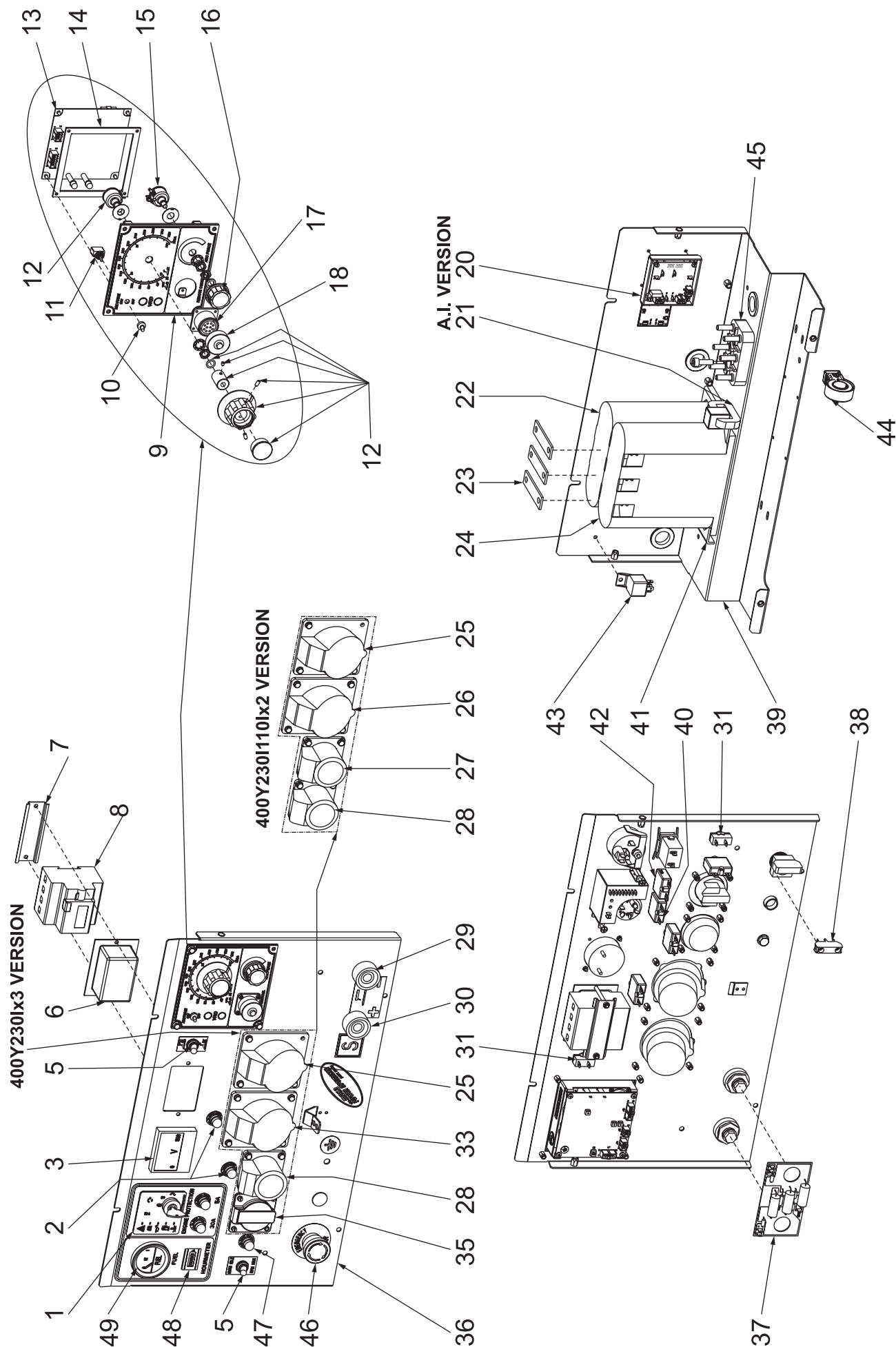


ABBREVIATIONS AND SYMBOLS:

- (EV) When ordering, specify the engine type and the auxiliary voltage
(ER) Engine with recoil starter only
(ES) Engine with electric starter only
(VE) E.A.S version only.
(QM) When ordering, specify the length in meters
(VS) Special version only
(SR) By request only

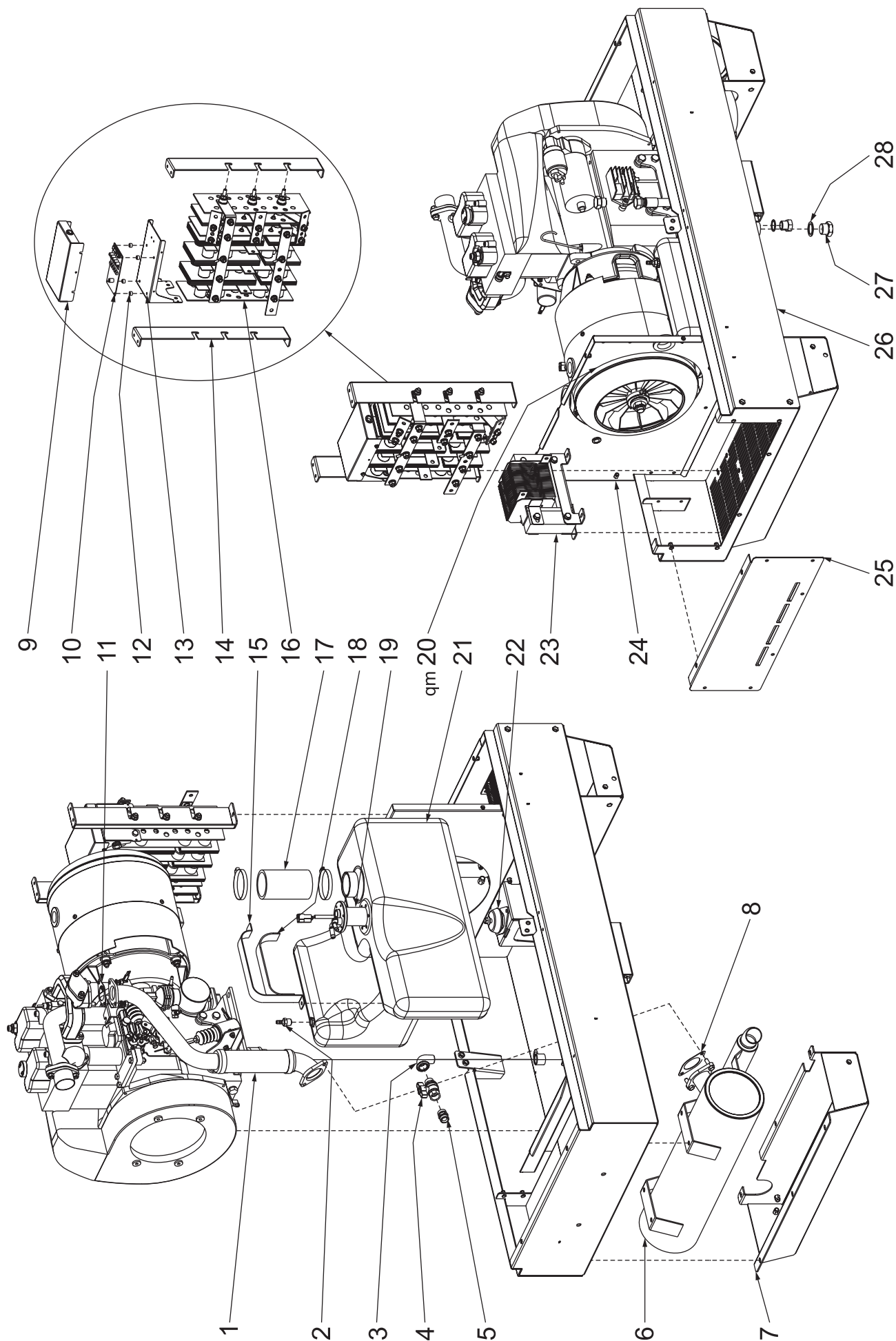
①	Ricambi	CT 350 LSX CT 350 LSX CC/CV	DI
ⒼⒷ	Spare parts		17.1
Ⓕ	Pièces de rechange		REV.0-05/12

Pos.	Cod.	Descr.	Note
1	M872416010	CONVOGLIATORE / CONVEYOR	
2	M210016020	VENTOLA / FAN	
3	M6050050	ANELLO SEEGER / RING, SEEGER	
4	M1001060	CUSCINETTO / BEARING	
5	M309503045	FLANGIA PORTA ALTERNATORE / ALTERNATOR FLANGE	
6	M872413025	STATORE / STATOR	
7	M273103030	ALBERO CON ROTORE (COMPL.) / SHAFT WITH ROTOR	
8	M309503040	FLANGIA / FLANGE	
9	M273112078	RACCORDO TUBO ASPIRAZ. FILTRO / AIR FILTER CONNECTION PIPE	
10	M105112020	ANTIVIBRANTE / VIBRATION DAMPER	
11	M307012037	PROTEZIONE ANTIVIBRANTE / PROTECTION, VIBRATION-DAMPER	
12	M273102200	MOTORE / ENGINE LOMBARDINI 12LD477.2	
13	M309503036	TIRANTE / TIE-ROD	
14	M273112219	LEVA COMANDO STOP MOTORE / ENGINE STOP LEVER	
15	M273113037	TIRANTE CARCASSA STATORE M8 / STATOR TIE-ROD	
16	M1018080	ANELLO OR / RING	
17	M105111450	MORSETTO / TERMINAL	
18	M105111460	MOLLA / SPRING	
19	M209812230	LEVA / LEVER	
20	M317612244	MORSETTO PER FUNE / TERMINAL	
21	M273119102	PIASTRA SUPPORTO SOLENOIDE / BRACKET	
22	M873819050	ELETTROMAGNETE / SOLENOID	
23	M305519056	TIRANTE / TIE ROD	
24	M107302860	GHIERA / RING NUT	
25	M319869056	FUNE COMANDO ELETTROMAGNETE / WIRE	
26	M209509056	TIRANTE / TIE-ROD	
27	M274009055	SOLENOIDE / SOLENOID	
28	M273112212	TUBO SCARICO OLIO / OIL EXHAUST PIPE	



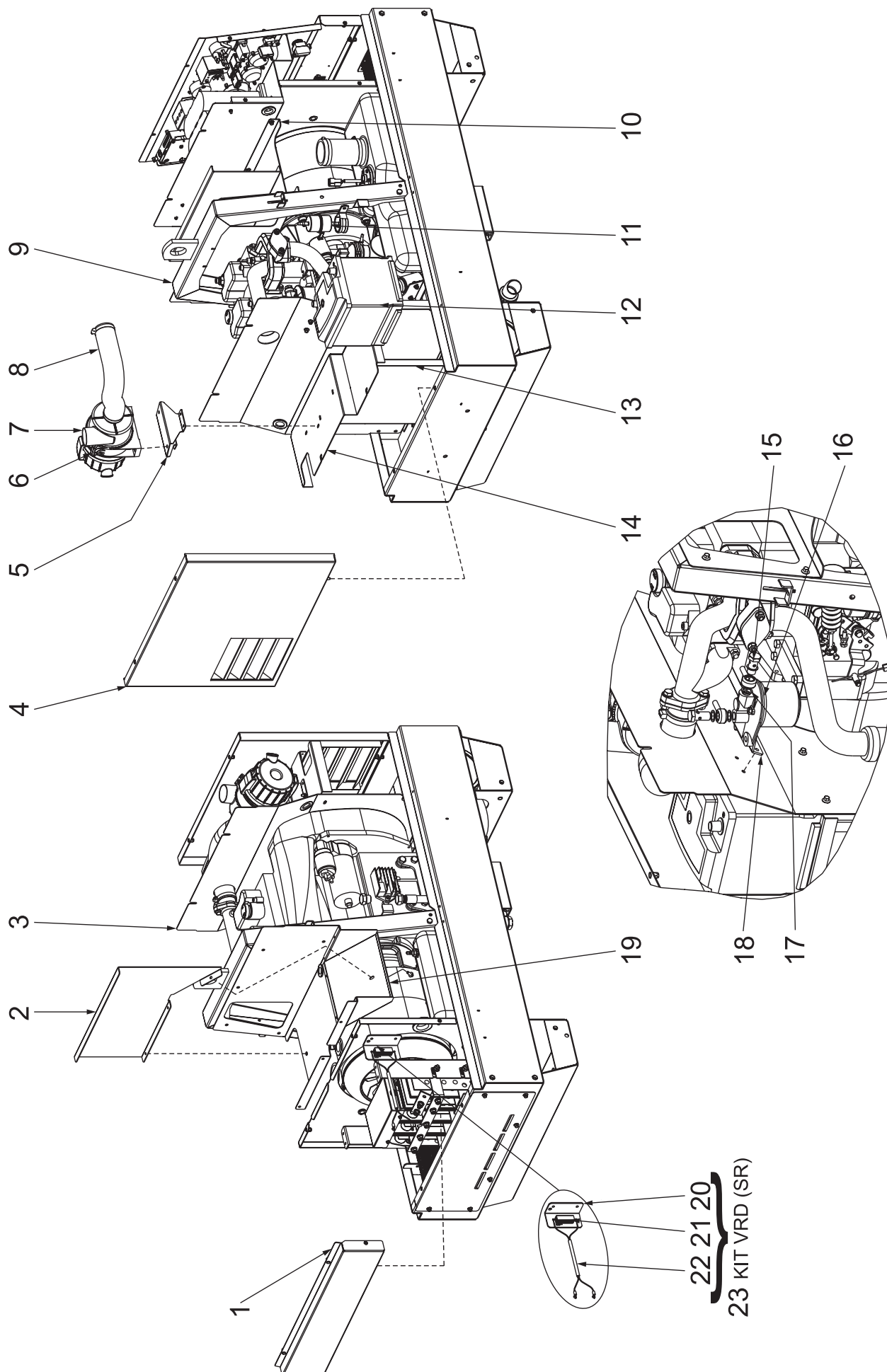
I	Ricambi	DI 18.1 REV.0-05/12
GB	Spare parts	
F	Pièces de rechange	

Pos.	Cod.	Descr.	Note
1	M265509770	UNITA'CONTROLLO MOTORE / <i>ENGINE CONTROL UNIT EP7</i>	
2	M306467107	DISGIUNT. TERMICO / <i>THERMOPROTECTION 20AMP 250 V</i>	
3	M105111550	VOLTMETRO FS 500V / <i>VOLTMETER</i>	
5	M282009962	CAPPUCCIO ISOLANTE / <i>CAP</i>	
6	M232027130	CAPPUCCIO PROTEZIONE I.D. / <i>CAP</i>	
7	M232027036	GUIDA / <i>FIXING GUIDE</i>	
8	M105111540	Vedi Cod. / <i>See part no. 219937105</i>	
9	M372957169	FRONTALE PER SCHEDA SALDATURA / <i>FRONT PANEL FOR WELDING PCB</i>	
10	M382009962	CAPPUCCIO ISOLANTE / <i>CAP</i>	
11	M282009902	DEVIATORE UNIPOLARE / <i>SWITCH</i>	
12	M222440543	KIT POTENZIOMETRO + MANOPOLA / <i>POTENTIOM. KIT + KNOB</i>	
13	M273109800	SCHEDA UNITA' CONTROLLO SALD.(WAC) / <i>WELDING CONTROL PCB</i>	
14	M372959628	GUARNIZIONE X SCHEDA SALDATURA / <i>GASKET FOR WELDING PCB</i>	
15	M372959701	POTENZ.LINEARE A FILO / <i>POTENTIOMETER 20 Kohm 2W ERMETICO</i>	
16	M372959702	MANOPOLA CON INDICE / <i>KNOB WITH INDEX</i>	
17	M765009910	CONNETTORE / <i>CONNECTOR</i>	
18	M765009911	CAPPUCCIO X CONNETTORE / <i>CONNECTOR CAP</i>	
20	M773819638	MODULO "AUTO IDLE" / <i>"AUTO IDLE" MODULE</i>	A.I. Version
21	M209509871	TRASFORMATORE / <i>TRANSFORMER</i>	A.I. Version
22	M107509880	BOX CONDENSATORI / <i>CAPACITOR BOX 3x65</i>	
23	M107509041	SBARRETTA BOX CONDENSATORI / <i>CONNECTING PLATE-CAPACITOR BOX</i>	
24	M105319880	BOX CONDENSATORI / <i>CAPACITOR BOX</i>	
25	M105111510	PRESA CEE 380V TRIFASE / <i>EEC SOCKET THREE-PHASE 380V</i>	
26	M105111530	PRESA CEE 32A 110V 2P+T / <i>EEC SOCKET 32A 110V 2P+T</i>	
27	M307047250	PRESA CEE 16A 110V 2P+T / <i>EEC SOCKET 16A 110V 2P+T</i>	
28	M307017240	PRESA 220V 16A / <i>EEC SOCKET 16A, 220V 2P+T</i>	
29	M102044400	PRESA DI SALDATURA (-) / <i>WELDING SOCKET (-)</i>	
30	M102301310	PRESA DI SALDATURA (+) / <i>WELDING SOCKET (+)</i>	
31	M282009741	INTERRUTTORE UNIPOLARE / <i>SWITCH</i>	
33	M105111520	PRESA CEE 220V MONOF. 2P+T / <i>EEC SOCKET SINGLE-PH.220V 2P+T</i>	
35	M259107241	PRESA SCHUKO 16A 230V - 2P+T / <i>SOCKET SCHUKO 16A 230V 2P+T</i>	
36	M273117020	FRONTALE / <i>FRONT PANEL</i>	
37	M372959860	SCHEDA FILTRO ANTIDISTURBI / <i>ANTI-JAMMING FILTER PCB</i>	
38	M265507237	CONTATTO NORMALMENTE APERTO / <i>CONTACT N.O.</i>	
39	M273117010	SCATOLA ELETTRICA / <i>ELECTRIC BOX</i>	
40	M352007109	PROTEZIONE TERMICA 5A / <i>THERMOPROTECTION</i>	
41	M209719882	STAFFA BOX CONDENSATORI / <i>CAPACITOR BOX BRACKET</i>	
42	M873407107	DISGIUNTORE TERMICO 30A/250V / <i>CIRCUIT BREAKER 30A/250V</i>	
43	M306479199	RELE' AVV. ELETTRICO / <i>RELAY, ELECTRIC START</i>	
44	M372955107	SENSORE DI HALL / <i>HALL SENSOR 300A</i>	
45	M105111830	MORSETTIERA / <i>TERMINAL BOARD</i>	
46	M744507219	PULSANTE STOP D'EMERGENZA / <i>EMERGENCY PUSH BUTTON STOP</i>	
47	M155307107	DISGIUNTORE TERMICO / <i>THERMAL SWITCH 15A-250V</i>	
48	M105511810	CONTAORE / <i>HOURMETER 230V 50Hz IP65</i>	
49	M325507210	INDICATORE LIVELLO CARBURANTE / <i>FUEL LEVEL GAUGE</i>	



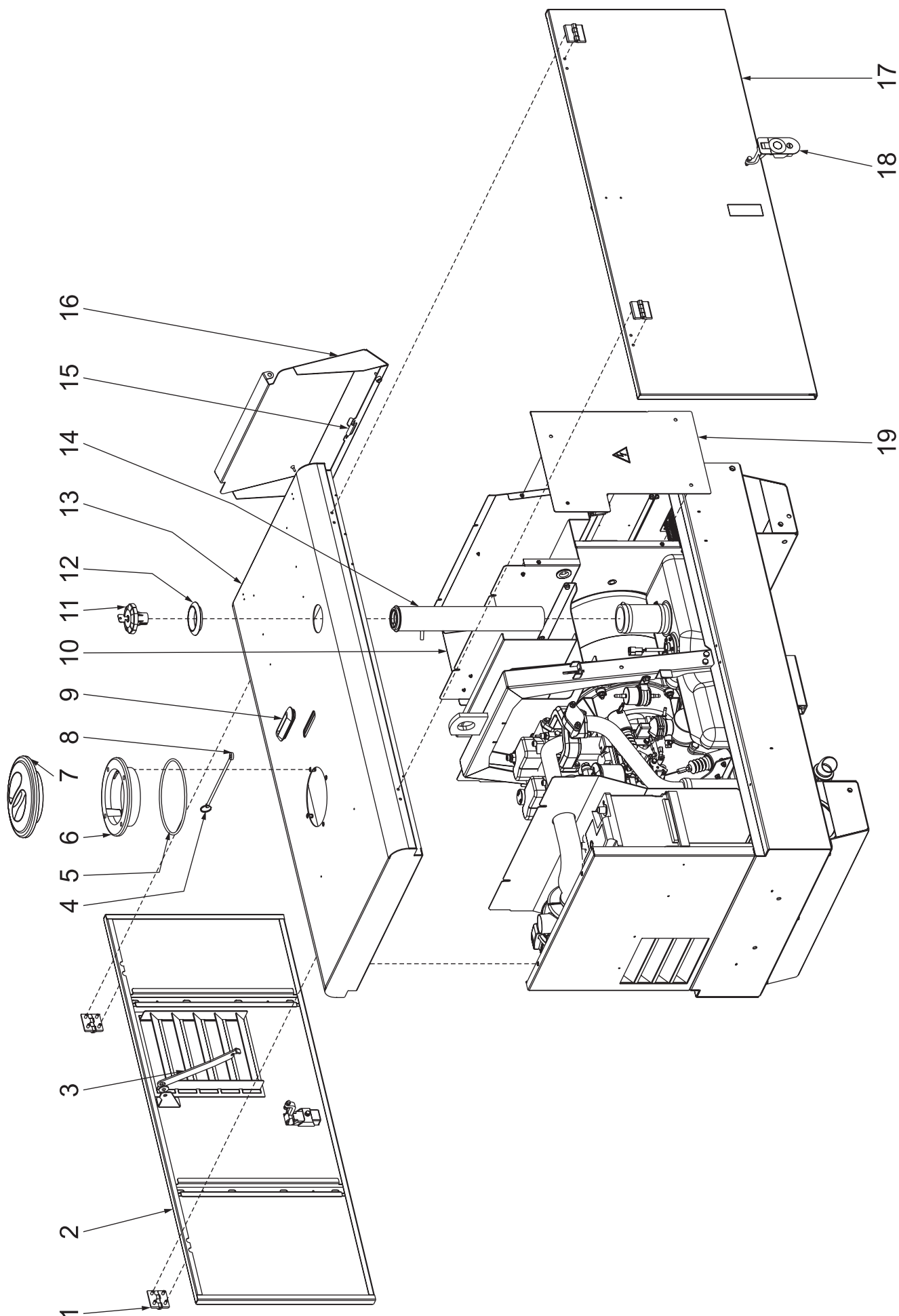
I	Ricambi	DI 20.1 REV.0-05/12
GB	Spare parts	
F	Pièces de rechange	

Pos.	Cod.	Descr.	Note
1	M273110566	KIT TUBO SCARICO / EXHAUST PIPE KIT	
2	M209702242	RACCORDO / PIPE FITTING FOR TANK	
3	M842252294	RACCORDO 90° 1/2" G / PIPE FITTING 90° 1/2" G	
4	MJJ0062025	RUBINETTO M-F 1/2" G / OIL TAP	
5	MJJ0062292	NIPPLO OLEODINAMICO 1/2" G / NIPPLE	
6	M273102050	SILENZIATORE SCARICO / EXHAUST MUFFLER	
7	M273111082	TRAVERSA PROTEZ.SILENZ.SCARICO / CROSS PROTECTION EXHAUST SILENCER	
8	M305232071	GUARNIZIONE / GASKET	
9	M273119654	SCATOLA PROTEZ. SCHEDA SALDATURA / BOX PROTECTION PCB WELDER	
10	M785109625	SCHEDA ALIMENTAZIONE/DRIVER / POWER SUPPLY PCB	
11	M209502071	GUARNIZIONE SILENZIAT.SCARICO / GASKET FOR EXHAUST	
12	M102302060	DISTANZIALE / SPACER	
13	M273119756	STAFFA SUPP. SCHEDA / BRACKET PCB WELDER SUPPORT	
14	M273115091	STAFFA SUPPORTO PONTE DIODI / DIODE BRIDGE BRACKET	
15	M273112139	FASCIA FISSAGGIO SERBATOIO / FIXING TANK, BAND	
16	M273115400	PONTE CHOPPER / CHOPPER BRIDGE	
17	M6095030	TUBO GOMMA / PIPE	
18	M372802134	FASCIA IN GOMMA x SERBATOIO / FUEL TANK RUBBER PROTECTION	
19	M273119975	SENSORE LIVELLO CARBURANTE / FUEL LEVEL SENSOR	
20	M102302280	GUARNIZIONE / GASKET (L=MT.1)	qm
21	M273112020	SERBATOIO CARBURANTE / FUEL TANK	
22	M307403106	ANTIVIBRANTE / VIBRATION DAMPER	
23	M273114100	REATTORE DI LIVELLO / LEVEL REACTOR	
24	M273118218	PARATIA INFERIORE ALTERNATORE / ALTERNATOR UNDERWALL	
25	M273111038	PIASTRA ANT.CHIUSURA BASAMENTO / BASE FRONTAL LOCKING	
26	M273111050	BASAMENTO / BASE	
27	M308101262	TAPPO SCARICO SERBATOIO / FUEL TANK CAP	
28	M308102023	GUARNIZIONE / GASKET	



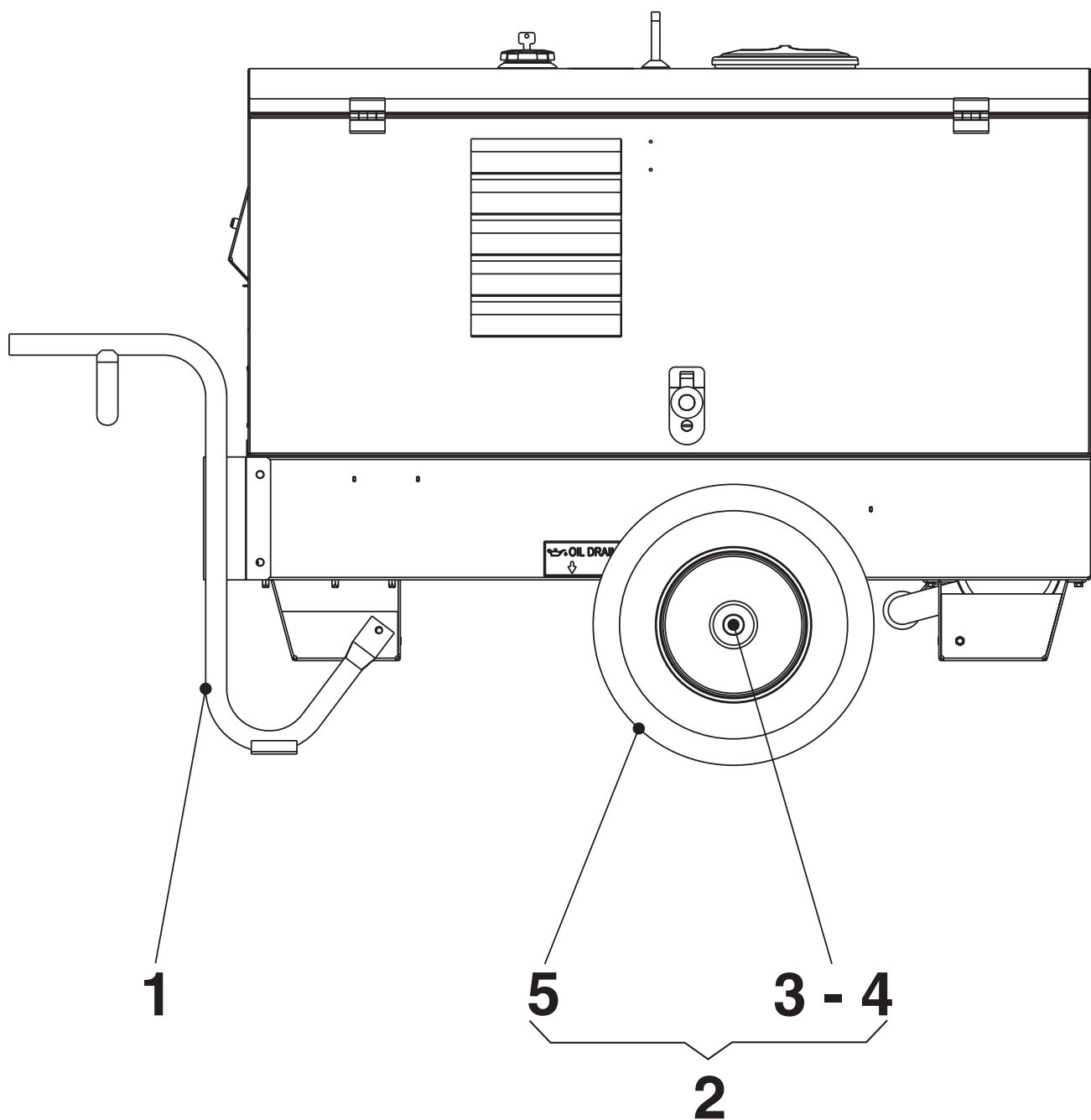
①	Ricambi	CT 350 LSX CT 350 LSX CC/CV	DI
Ⓒ	Spare parts		21.1
Ⓕ	Pièces de rechange		REV.0-05/12

Pos.	Cod.	Descr.	Note
1	M273117206	PARETE POSTERIORE CARENATURA / CANOPY REAR COVER	
2	M273118067	PARATIA SETTO INSONORIZZANTE / NOISE PANEL	
3	M373111046	PARATIA CAMERA ASPIRAZ. MOTORE / INTAKE CHAMBER BULKHEAD	
4	M273118035	CARENATURA POSTERIORE / REAR COVER	
5	M273112122	STAFFA SUPPORTO FILTRO ARIA / AIR FILTER SUPPORT BRACKET	
6	M273112125	COLLARE SUPP. FILTRO ARIA / AIR FILTER SUPPORT RING	
7	M273112130	FILTRO ARIA A SECCO (4") / AIR FILTER (DRY)	
8	M1229820	TUBO FLESSIBILE / FLEXIBLE PIPE (MT.1)	
9	M273111100	ROLL-BAR / ROLL-BAR	
10	M273118222	COPERTURA ALTERNATORE / ALTERNATOR COVER	
11	M256602228	FILTRO GASOLIO / FUEL PRE-FILTER	
12	M359259150	BATTERIA / BATTERY	
13	M273118477	LAMIERA SETTO INSONORIZZANTE / BAFFLE BRACKET	
14	M273118322	MENSOLA SUPPORTO BATTERIA / BATTERY SUPPORT BRACKET	
15	M102043890	VITE FORATA / SCREW	
16	M102043150	SUPPORTO FILTRO / SUPPORT, FUEL FILTER	
17	M102043880	GUARNIZIONE / GASKET	
18	M273112241	STAFFA SUPP. PRE-FILTRO GASOLIO / SUPPORT PRE-FILTER	
19	M273118309	LAMIERA CHIUSURA CASSONETTO / MUFFLER BOX BRACKET	
20	M372959847	DISSIPATORE PER RETE R.C.(VRD) / R.C. NET DISSIPATOR (VRD)	
21	M1286200	RESISTORE CORAZZ. 150 OHM 50W / CORED RESISTOR 150 OHM 50W	
22	M37295C074	GR. CAVI PER RETE R.C. (VRD) / WIRING HARNESS FOR R.C. NET	
23	M273110174	KIT DISPOSITIVO VRD / VRD KIT	(SR)

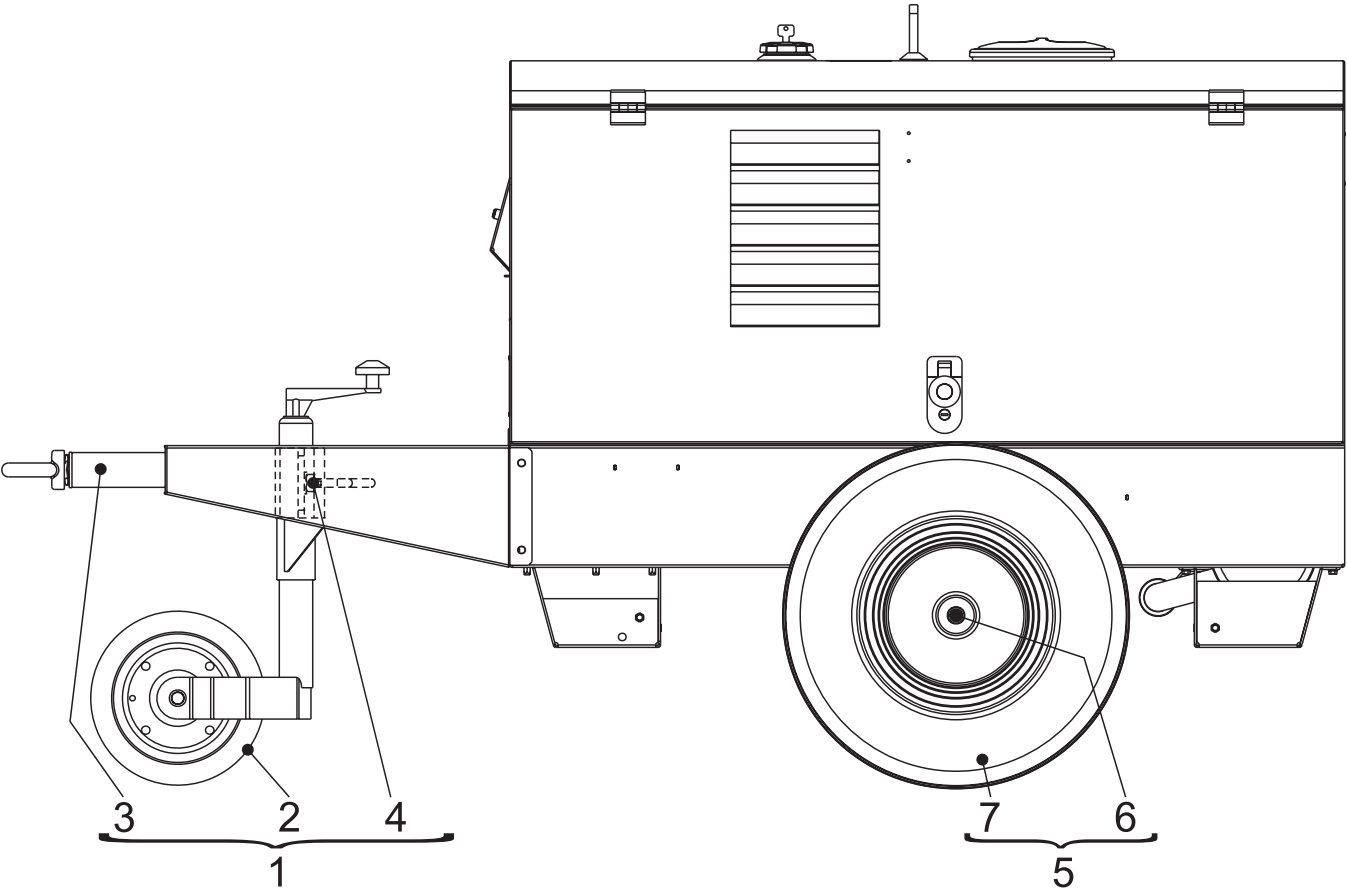


①	Ricambi	CT 350 LSX CT 350 LSX CC/CV	DI
ⒼⒷ	Spare parts		22.1
Ⓕ	Pièces de rechange		REV.0-05/12

Pos.	Cod.	Descr.	Note
1	M273118140	CERNIERA / LATCH	
2	M273118426	PORTELLA DESTRA / RIGHT SIDE	
3	M273118087	ASTA SOSTEGNO PORTELLA / INSPECTION COVER BRACKET	
4	M841659358	ANELLO DOPPIO / DOUBLE RING	
5	M1018130	ANELLO OR 6720 / OR RING	
6	M841658361	GHIERA PER COPERCHIO ERMETICO / FLANGE FOR AIR-TIGHT SEALED COVER	
7	M841658360	COPERCHIO ERMETICO / ERMETIC COVER	
8	M841659357	TIRANTE IN GOMMA / TIE ROD	
9	M273112022	GUARNIZIONE PER ROLL-BAR / GASKET	
10	M273118010	FIANCATA DX CARENATURA ANT. / RIGHT SIDE FRONT COVER	
11	M317802026	TAPPO SERBATOIO CON CHIAVE / CAP, TANK	
12	M354502022	GUARNIZ. TUBO RIEMP. SERBATOIO / GASKET	
13	M273118091	CARENATURA SUPERIORE / TOP COVER	
14	M273118319	TUBO PROLUNGA CARICO CARBURANTE / FUEL FILLING PIPE	
15	M102042870	MOLLA / SPRING	
16	M273118100	COPERCHIO FRONTALE / FRONT COVER	
17	M273118428	PORTELLA SINISTRA / LEFT SIDE	
18	M744508136	MANIGLIA A PULSANTE / HANDLE	
19	M273118015	FIANCATA SX CARENATURA ANT. / LEFT SIDE FRONT COVER	



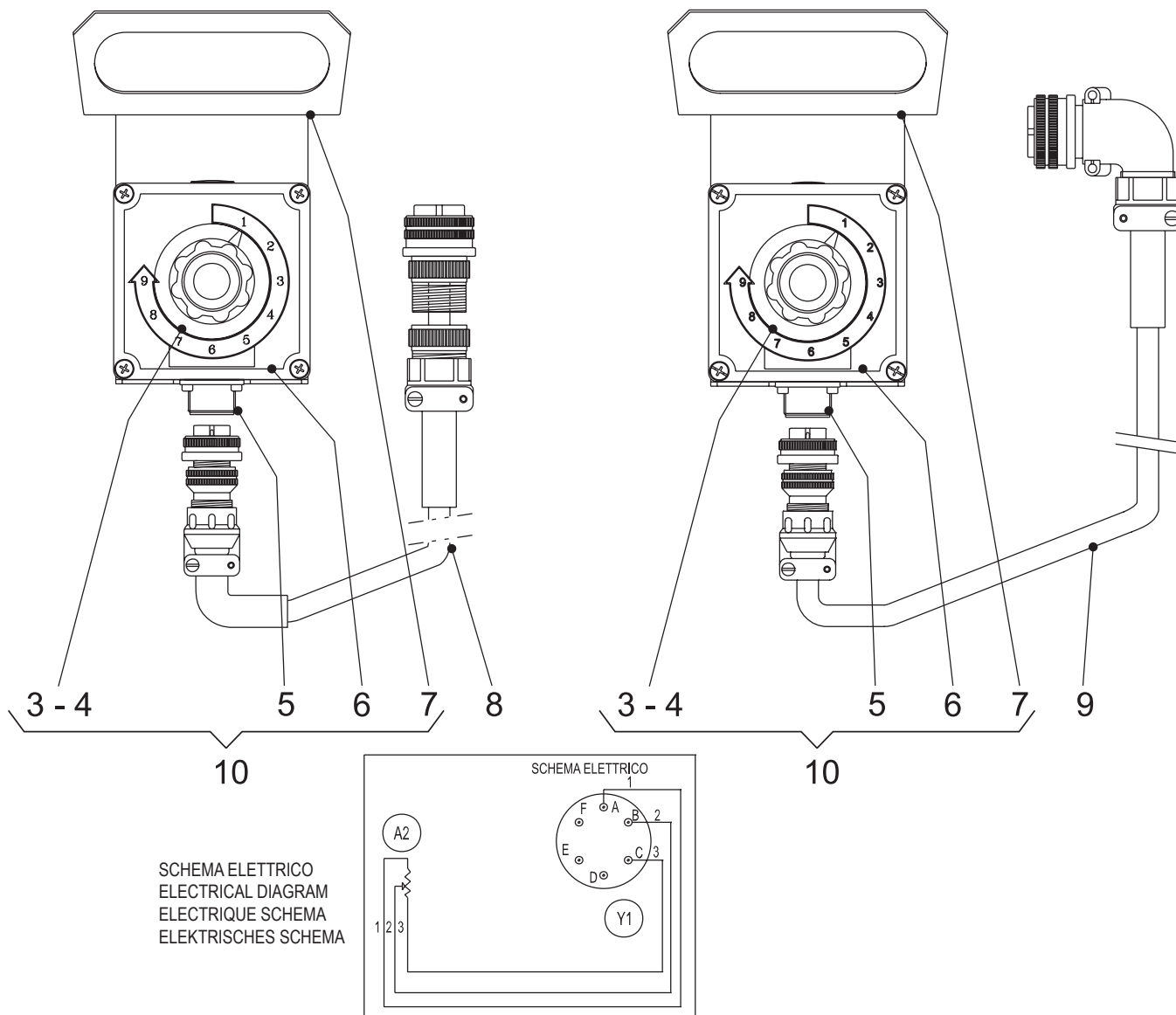
Pos.	Cod.	Descr.	Descr.	Note
1	M0000273110131	GR.MANIGLIE x TRAINO MANUALE	KIT HANDLES	
2	M0000273110132	GR. ASSALE, RUOTE TRAINO MANUALE	KIT WHEELS AND HANDLES	
3	M6075020	COPIGLIA	PIN, SPLIT	
4	M273111160	ASSALE	AXLE	
5	M209711170	RUOTA	WHEEL	



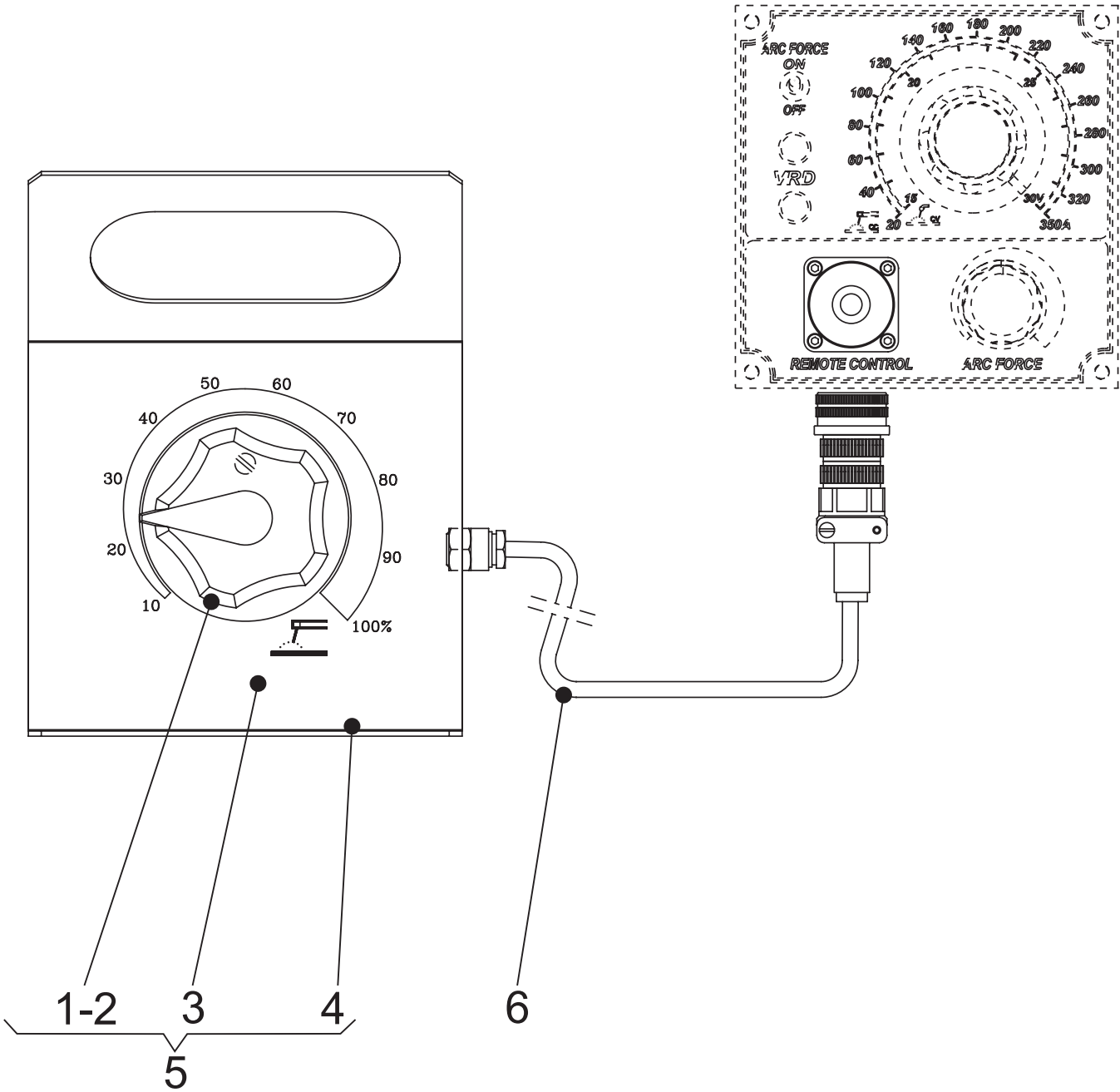
Pos.	Cod.	Descr.	Descr.	Note
1	M0000273110141	GR.TIMONE,PIEDE X TRAINO LENTO	KIT SITE TOW	
2	M102351750	RUOTA D'APPOGGIO	PARKING STAND	
3	M273111150	TIMONE	TOW BAR	
4	M217601080	MORSETTO FISS. RUOTA D'APPOGGIO	STANDING WHEEL JAW	
5	M0000219930142	GR. ASSALE, RUOTE TRAINO LENTO	KIT SITE TOW	
6	M209701160	ASSALE	AXLE	
7	M105112770	RUOTA	WHEEL	

RC2

RC2/90°



Pos.	Cod.	Descr.	Descr.
3	M308300543	MANOPOLA REGOLAZIONE COMPL.	KNOB, REGULATOR COMPLETE
4	M836709715	POTENZIOMETRO	WELDING CURRENT REGULATOR
5	M836709910	CONNETTORE FEMMINA	FEMALE CONNECTOR
6	M836700524	SCATOLA	BOX
7	M308309900	MANIGLIA COMANDO A DISTANZA	REMOTE CONTROL HANDLE
8	M0000KD0259904	CAVO COMANDO DISTANZA	REMOTE CONTROL CABLE
9	M936829904	CAVO COMANDO DISTANZA	REMOTE CONTROL CABLE
10	M936840555	COMANDO RC2 SENZA CAVO	RC2 REMOTE CONTROL



Pos.	Cod.	Descr.	Note
1	M107509702	MANOPOLA REG.CORRENTE SALDAT. / KNOB,WELDING CURRENT REGULAT.	
2	M836709715	POTENZIOMETRO / WELDING CURRENT REGULATOR	
3	M209519901	COPERCHIO (CD) / COVER	
4	M107509900	SCATOLA / CASE, BOTTOM HALF	
5	M93089904	CONNETTORE COMPLETO DI CAVI / CONNECTOR WITH CABLES	

